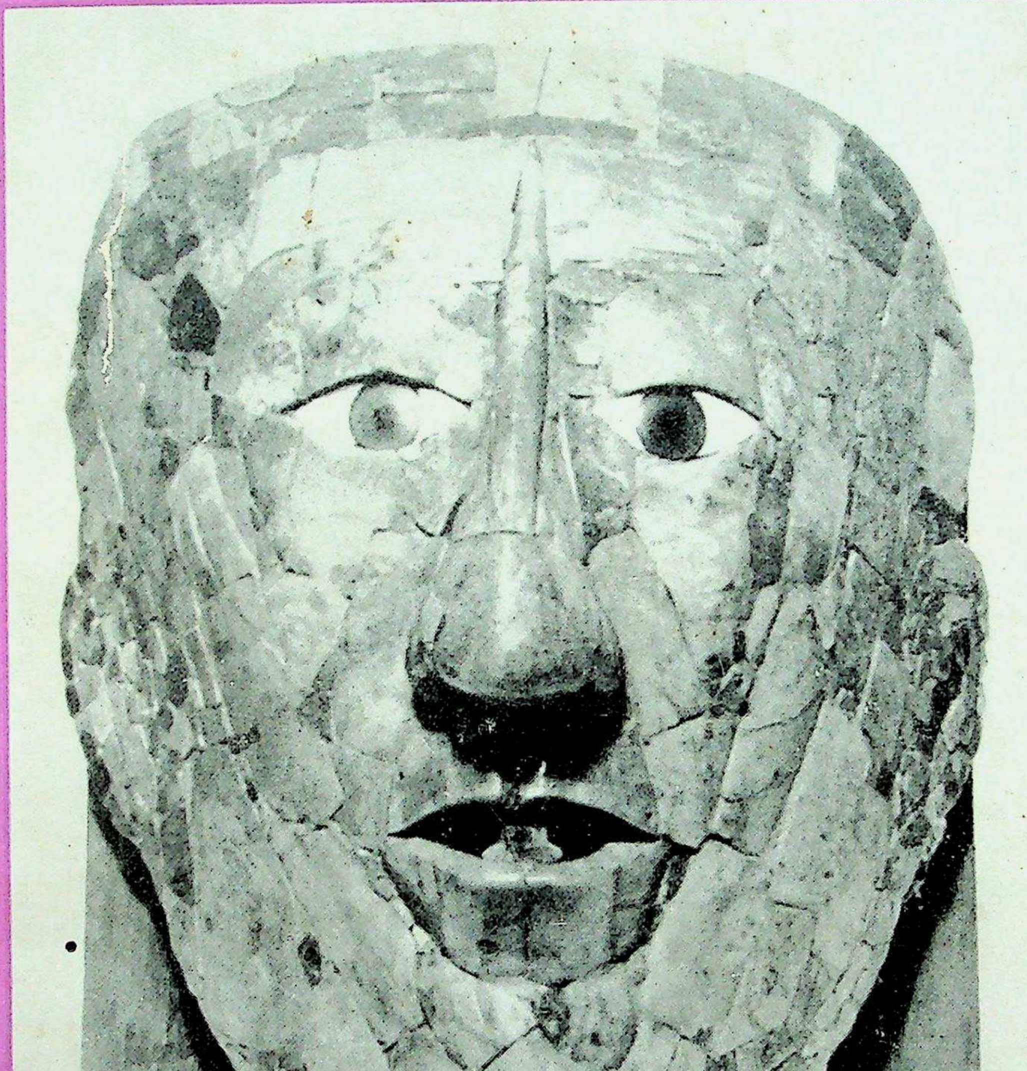
THE WORLD OF

ARCHAEOLOGY

India China America



MARCEL BRION

The World of Archaeology

INDIA–CHINA–AMERICA

MARCEL BRION

Translated by
MIRIAM AND LIONEL KOCHIN

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CHAPTER I

LIVING ARCHAEOLOGY

ARCHAEOLOGY IS the science of life. This will seem paradoxical to those who have never known the joy of seeing ruins laden with prodigious secrets emerge from the earth. To them, archaeologists are scholars solely occupied with dead things—excavating the débris of temples and houses, opening tombs, unrolling bandages from mummies, and counting up funeral treasures. And it is indeed true that the precautions taken by man to preserve his corpse and to assure himself a life in the hereafter similar to his earthly existence have often supplied a reasonably exact knowledge of the customs and ideas of vanished races.

It is usually necropolises which preserve the form and image of life, either because the respect attached to death defends the sepulchres against the devastations annihilating the abodes of the living, or because the secrecy with which the tomb is prepared and hidden (in stony chambers or beneath thick layers of soil) give it an impunity which the most powerful cities and highly venerated temples never possess.

J. J. Bachofen has shown how great a part funeral technique and symbolism have played in the history of civilization. In fact, certain races who built terrestrial constructions of extreme fragility, surrounded their posthumous abodes with every material and magical precaution to assure peaceful repose to the dead.

The greatest proportion of present archaeological knowledge has come from tombs. The custom which for thousands of years ordained that a man's corpse be buried with his everyday objects has revealed tool-sets in silex, necklaces made of teeth or shells, bone pendants and regalia of rank dating from the most remote prehistoric times. This tradition was perpetuated in certain European countries up to the middle of the Middle Ages. Viking tombs, such as those of Gostad and Oseberg, have revealed sledges and thrones of sculptured wood piled up on the sailor's boat—that boat which was his companion in life and which became his last abode. These were covered with enormous barrows of stones and earth.

The Mexican tombs at Mount Alban, with their fabulous jewels, have brought to light a totally unexpected aspect of pre-Columbian American society. It is unnecessary to recall here the discovery by

Carter and Carnarvon of the tomb of Tutankhamen, with its funeral furniture intact, one of the very rare Egyptian tombs to escape pillage. Central Asian civilizations began to be known as a result of the examination of sepulchres. The discovery by Colonel Kozlov in 1925 of a collection of tombs in the neighbourhood of Ourga is as stimulating to the imagination of the layman as it is instructive to the scholar. The tumuli of Noin-Oula contained the most extraordinary mixture of treasures: Chinese objects, Scythian gold and silver work, Iranian jewellery. Vases formed with all the delicate refinement of Greek civilization stood side by side with strange embroidered fabrics which, despite a sojourn of two thousand years in the tomb, had lost none of their original freshness. Some of the embroidery on felt, depicting fantastic figures of animals and monsters, was particularly difficult to identify. On the one hand it savoured of the art of the Steppes, on the other of Chinese art, and was also somewhat reminiscent of Sumerian workmanship.

The tumuli at Altai, visited by a Russian mission in 1929, evoked at a glance the very spirit of ancient myths and epics. The tomb consisted of a central room surrounded by a sort of vestibule. This central room which held the remains of the chief—one of those nomad chiefs who, like Attila and Gengis Khan, had led immense tribes in warlike migrations—had been pillaged. We can only imagine the splendour of the treasures which the thieves removed. Fortunately, however, the vestibule was intact. Satisfied, no doubt, with their plunder, the thieves had neglected objects of lesser value. The vestibule contained six carcasses of horses still equipped with saddle and harness. Leather bridles with gold appliqué decorated the skeletons; golden masks still lay on the fleshless skulls of the chargers. These masks transformed the horses into fantastic animals vaguely reminiscent of the griffin or reindeer, with golden wings which made them into unbelievable Pegasuses.

To what tradition does this bizarre disguise correspond? Who can say? Nothing in earlier discoveries or in the texts of the time holds any clue to the interpretation of this strange costume. It is even impossible to specify the race to which the occupant of the tomb belonged. At the most, it can be dated to the beginning of the Christian era.

Here, archaeological discovery poses a question and does not answer it. But elsewhere all we know of certain races comes from their sepulchres. What would we know of the life of the ancient Egyptians, for example, if we had not seen them sailing their light boats on the Nile or on the lakes of their country houses, carousing to the sound of instruments played by blind musicians, assisting at the revels of the brown dancers, hunting hippopotami in the marshy reeds? We see their pet monkeys playing under their armchairs, their cats attached to the feet of their chairs, greedily attacking fish, their cooks bustling around their stoves. And here is the whole of their life, the life of the fields with the sowing and the harvest, the life of the river where the fishermen drag in their nets heavy with fish, while the sailors sing over their long oars. Here is the sculptor's studio, the master busy carving the statue of a princess, while his pupils and apprentices watch in wonderment, while a precise inscription explains (rather unnecessarily) the cause of their wonder: "It is she! It does everything but talk!"

The archaeologists followed a lengthy passage underground, they crawled along narrow corridors, retraced their steps in the face of cul-de-sacs, crossed unsteady beams across gloomy holes—and came suddenly into the presence of all that was gayest and most exciting in life.

Add to this the surprise archaeologists feel at the especially modern aspect of certain unexpected discoveries and it is understandable that, for the archaeologist, an inanimate object is imbued with life. There is the scholar who exclaimed at the sight of a Cretan statuette, "But she is a Parisienne!", baptising her thus with the name which has become her own. And again, note the suspicion that the curators of certain museums feel towards as yet unidentified antiquities which, because of their perfect preservation and modern appearance either in technique or spirit, do not seem authentic. These objects unearthed by archaeological research supply a means of checking the literary texts and, in certain cases, of replacing them. They provide the illustration required to gain an idea of the manner in which the men of antiquity lived. "Excavations," said the Count du Mesnil du Buisson, "supply a quantity of texts, most frequently contemporary with the events: lapidary inscriptions, tablets, inscriptions on very varied objects, more rarely on parchment or papyrus. The very quantity of these documents enables cross-checking. But, above all, excavation completes the literary sources, by restoring the framework of history and those of the life of the ancients. The literary accounts generally seem to lack that actuality which alone gives the true aspect of the facts: the writers have neglected or concealed a number of features because they did not correspond with their literary purposes or because they assumed they were known to their contemporaries. Our modern mind requires a quantity of detail and accuracy in order to appreciate the full value of a historical account, and excavation alone can provide this. Even for the periods best covered by literary sources it is easy to see that excavations provide new elements. Few epochs for example have been more studied than the first century A.D. in Italy;

but before the recent excavations of Ostia, Rome and Pompeii it was not possible to make an exact estimate of the place held by eastern cults in the west at that epoch; an important factor was almost totally absent."[1]

One of the most curious examples of the contribution made by excavations to literary research has been the discoveries in Ithaca. Among the points still debated in Homeric criticism, doubt remains as to the exact situation of the island of Ulysses. Ancient Ithaca is usually identified with the modern island of Thiaki, but all scholars are not in agreement. Professor Dorpfeld, for example, in a scholarly work, has tried to demonstrate that Homeric Ithaca was in reality the island of Leucadis, known today as Santa-Maura. However, excavations in Ithaca by Heurtley produced (apart from very noteworthy antiquities) a fragment of votive inscription on a terra cotta plaque containing a dedication to Ulysses. The fact is entirely new and very strange. It could be deduced from this discovery that the personality of the sailor became a sort of tutelary divinity or guardian spirit on his island, a hero endowed with supernatural power, whom the Ithacans approached when in need of an intermediary between the divinity and themselves. Whatever the significance attached to this text, which it is impossible to date, it becomes very clear that on this island, generally believed to be the one of which he was king, Ulysses eventually assumed in the popular mind a supernatural character. Those scholars opposed to Dorpfeld's thesis have not failed to use this argument in defence of their own theories.

The contributions of excavation to the history of literature are immense. All that we know of Egyptian literature, all the Mesopotamian and Hittite epics, come from excavations. They have also thrown the most valuable light on the diplomatic history of antiquity, with the discovery of the economic archives in cuneiform characters of Kultepe, the archives of Tell el Amarna, the library of Ras-Shamra, the tablets of Lakhish. The discovery of the engraved bones at An-yang, in Upper Honan, has made possible the study of the completely unknown territory of the Shang and Chou dynasties in ancient China. Today Chinese scholars are busy deciphering the inscriptions on these bones, where magnificent texts, fragments from classical mystics, from the oracles, phrases from the Book of Changes bear witness to the existence of religious literature at a time when it was doubtful that writing was in use in China.

Medicine can learn from such discoveries. Thus it is known that trepanning was used by the Incas at a very remote date and in Palestine in the course of the second millennium B.C. Professor Elliot Smith has specialized in the medical examination of Egyptian mummies and this has led him to some very curious conclusions. A particularly strange example of this posthumous examination is his diagnosis of the illness of the Pharaoh Menephtha, who followed the Hebrews across the Red Sea and died with his army when the waves closed behind them over the pursuing Egyptian cavalry. The Bible says of this Pharaoh that he had a "hardened heart", making obvious allusion to his character and not to the state of his circulatory system. But it is curious to note that during the examination of Pharaoh's mummy it was found that he suffered from a heart disease called *atheroma* which makes the heart rigid and removes its elasticity. This illness is said to attack the brain and produce changes in character. It results in a narrow-mindedness and stubbornness of will, with loss of enthusiasm and taste for adventure, hesitation and inhibition in the face of new enterprise. This corresponds exactly to the impression given by the Biblical account.[1]

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[1] *La Technique des Fouilles archéologiques*, Paris, Geuthner, 1934, p. 8.

To enumerate what excavation means to the history of art would be superfluous. The variations in the mentality of a nation which occur in course of time are clearly reflected, not only in that nation's major art forms—architecture, sculpture, painting—but also in the realms of applied art. The vicissitudes of Spartan ceramics, for example, precisely follow the trend of the social life of the state. In the seventh and eighth centuries B.C., art blossomed in a town which was ordinarily considered indifferent to aesthetics. However, as from the seventh century, under the influence of growing militarism which directed all the thoughts and forces of the community towards preparation for war, art atrophied progressively, so much so that the aesthetic culture of the Spartans stopped at the archaic stage and never passed beyond it. This cessation of intellectual development, illustrated by excavations in the Temple of Artemis Orthia, Athena Chalcicus and of the sanctuary known as Helen and Menelaus, substituted coarse and clumsy figurines and votive offerings for a sculpture already in process of evolution, and soon limited itself to small lead military figures reminiscent of the tin soldiers children play with.

It would be futile to repeat here all that history owes to archaeology. This must be self-evident. The history of religion would also not be possible if excavation had not revealed the ruins of temples, effigies of gods, ex-votos of worshippers, repositories of sacrifices, ritual objects and, in certain cases, even the texts of prayers, invocations, hymns, incantations and the prescription of rites. Archaeology is the necessary complement to history. The archaeologist must be a historian. By discovering the material elements of which history is made, he restores to it the colour and movement of life.

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[1] See W. H. Boulton, *The Romance of Archaeology*, Sampson Low, 1931.

The modern archaeologist experiences a unique emotion. The discovery of the suffocated soldiers in the tunnel at Doura-Europas equals in tragedy the exhumation of the corpses at Pompeii. When Tepe-Hissar was destroyed by fire, the inhabitants fled with their most precious treasures; a young man choked by smoke, whose corpse was found near a staircase, clutched an onyx vase under his arm—the only thing he had thought of taking with him. We find a dancer massacred by invaders when a town was sacked, her entire jewellery still around her fragile skeleton; four young Nubian slaves lie strangled in their master's tomb, still bearing the cord which killed them. The thumb of the potter is still marked in the clay of a vase dating from the fifth or sixth millennium B.C.; the accessories of a Cretan sacrifice remain strewn on the ground in the very state in which earth tremors threw them; the steps of slaves who walled up a tomb stay printed in the sand of the corridor. In the courtyard of the white temple at Uruk-Warka, Delougaz found an enclosure which probably served for sacrifice. In dried mud between the altars and the table for offerings, traces of the feet of numerous sheep, collected there for sacrifice, are still discernible. Between these prints, as clearly as if made yesterday, are the marks of human feet —those of the shepherds or the sacrificer.

Even people who are not interested in the historical significance of a discovery such as the Royal tombs at Ur cannot read without a shudder the descriptions of the solemn funeral rites of the dead king, in the books of Sir Leonard Woolley. They are excited by his description of the chariots which went down into the tomb, the soldiers lined up behind the grooms, the musicians holding their harps, the maids of honour adjusting their fragile golden and lapis-lazuli head-dresses, all awaiting the signal to drink the poison which would send them into the other world in the train of their king. And the picturesque detail of the lady of honour who did not have time to adjust the golden net on her hair and who still carries it in her belt, adds that note of touching and picturesque familiarity to the grandeur of a ceremony which the archaeologist has relived and which the reader relives after him, as if he had been a spectator over five thousand years ago.

The history of civilization would not be possible without archaeology. This is obvious today when new discoveries bring to our knowledge centres of culture absolutely unknown even a dozen years ago. All that we know of the antiquity of Elam comes from recent sources. The remains of civilization discovered by Pumpelly in Turkestan are beginning to be identified. The civilizations of the Indus still retain some of their most precious secrets, despite the work of Marshall and Mackay. As for the civilizations of Baluchistan

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and Waziristan, research by Sir Aurel Stein arouses suspicions of enormous interest but no definite conclusions are as yet available to the public.

New centres of culture appear almost every month, as excavations begin in regions as yet unexplored. The great interchange of civilizations which took place between one country and another as early as the prehistoric epoch is beginning to come to our attention. This sort of general civilization which existed in the fourth millennium in Mesopotamia, Elam and the valley of the Indus was confirmed by discoveries of similar types of pottery, and of seals, indicating a communion of customs, beliefs and artistic forms. Aegean vases found at Vinca in Bulgaria finally gave definite proof of commercial relations between Central Europe and Crete at a time when the countries were not even thought to be in mutual contact. On the same lines, the work of the French mission in Afghanistan reaped an extraordinary harvest of works of art which no longer testified merely to the hellenistic influences to which the Ghandara style owed its origins, but to much more complex and varied elements. The influence of Sumerian art on the races of the Steppes, the persistence of Mesopotamian motifs on the jewellery of the Huns and the Scythians, Persian themes surviving in the bronze ordos and in ancient China, the striking resemblance between such a theme as a harp at Ur and an exactly similar theme on the enclave at Kelermes—all this enables us to guess at an enormous ramification of commerce which enabled ideas and aesthetic forms to travel from country to country.

It is the movement of civilization to which the "*static*" science of archaeology testifies. There is no science more mobile, not only because its field of action is the whole world and no desert escapes its research, but also because time as well as space is no obstacle. It notes the march of the civilizations, it enumerates their steps and their paths, it follows the routes covered by merchants and warriors. In Hungary it opens tombs containing masterpieces of Scythian gold and silver work, the golden stags of Zöldhalompuszta, the golden plaques at Kostromkaia. It reveals the wanderings of techniques and styles, distinguishing at Tripolje, in the Ukraine, pottery analogous to that of Elam and Sumer. Is it only by a fortuitous similarity of custom that corpses both at Tripolje and at Moussian in Persia were burned on clay platforms? Or can some transmission of ideas be traced here? Or, to go further, is this evidence of some prehistoric tradition extending over a wide area?

The mysterious Mediterranean Megalithic civilization can be interpreted in the same way. There only remain a few traces of this, in the *nuraghi* at Sardinia, in the talayots of the Balearics, in the Taxian temples at Malta. . . . This is one of the most pressing of the unknown quantities which archaeology still presents, because it concerns regions near to us and refers to a culture at present undefinable. Megalithic buildings have been found at Minorca which were certainly religious sanctuaries and which are known as talayots. There are large stone monuments in the shape of a T, the use of which is unknown. In Ethiopia, Father Azais has made discoveries of a somewhat similar character. The interest of this latter work has not been sufficiently stressed, although Salomon Reinach has emphasized its great value. Discussing the book[1] by Father Azais and Roger Chambard, he wrote: "This publication is of great archaeological importance and poses new questions which no one is capable of answering. We find in fact, in these regions to which access is difficult, monuments going back to a very distant past, which in many respects, i.e. dolmens, standing stones, statues, menhirs, neolithic idols, are strikingly reminiscent of those in the west of Europe; there are also steles decorated with sculptured daggers of the Bronze Age type, of which no other examples are known. To explain away the analogies which Father Azais has pointed out, as chance, or by the anthropism of Clermont-Ganneau (which comes to the same thing), is utterly impossible; everything indicates that the same neolithic and eneolithic civilization, characterized by the tendency to handle rough stones, squared not at all or only slightly, but sometimes decorated to resemble the human figure, especially the feminine figure, had extended over an enormous territory without, however, occupying it entirely. This does not necessarily involve the migration of numerous populations but the transfer of ideas and perhaps of religion. All recent hypotheses based on an African centre of diffusion are without foundation or probability; one forgets too easily the thousands of dolmens in India."[2]

It is possible that this hypothesis of an African diffusion may be the only correct solution. Discoveries by Frobenius of sculptures of singular beauty which probably go back to the second millennium B.C. and which owe nothing to any other culture, in a region from which it was supposed that all ancient culture was absent, every day give more substance to the African theory. The lost capitals of the Transvaal and Rhodesia may contain a definite answer to these questions.

Perhaps something will also be found at Malta to throw some light on the enigma of the neolithic temple at Imjar—monumental and built with most precise technique, with its three circular rooms

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[1] *Cinq années de Recherches archéologiques en Ethiopie*, Paris, Geuthner, 1931.

[2] *Revue archéologique*, 1932.

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fitting into each other. At Hagiar Kmi, Hal Tarxeien and Mnaidra there are bizarre sanctuaries to an unknown god, Cyclopean constructions which popular tradition attributes to the giants. These enormous walls, steles sixteen to twenty feet high, immense monolithic sacrificial tables where oxen were slaughtered, all point to an unknown civilization of which nothing remains outside the temples, except for some curious pottery scattered nearly everywhere in the Balearics. The strangest of these Maltese temples is that of Hal Safieni, an underground sanctuary consisting of a series of rooms covering over 1,400 feet. The ceilings are painted with curious indecipherable symbols, and a strange play of acoustics has been noticed there—quite certainly intended—which makes it possible to hear terrifying voices in shadow and solitude.

The above examples, which could easily be multiplied, prove that even Europe, at every period of her history, remains unknown. It is not surprising therefore to note how little we know about the Maya, despite the ruins of Yucatan, or the mound-dwellers. Excavations at Panama, Guatemala and Honduras have taught us a little more, especially since the discoveries at Minaha, Lubaantun. But what is known is nothing compared with what remains to be learnt. All the Andean civilizations are also equally unknown. The mystery of the abandoned towns on mountain tops remains unsolved, and neither the reason for their settlement nor the motives which led to their abandonment are at all clear. Nobody can guess at the people who lived there, whence they came or whither they went.

Circumspection is obligatory in a science where every *faux pas* runs the risk of diverting research along a false trail. And if we complain at times of the slowness with which certain archaeologists publish the results of their work, this circumspection is but proof of the true scientific mind which waits until it possesses certainties before communicating them to the public. Nothing is more dangerous than error—except perhaps a half-truth.

CHAPTER II

THE NEW TECHNIQUES

THE MEANS that science has placed at the disposal of archaeologists for the prospecting, excavation, examination and dating of sites, have enabled much more exact and definite information to be obtained in a sphere where empiricism has prevailed for too long. If there was ever a time when the excavator was content to be accompanied only by a draughtsman and a photographer (should he be neither of these himself) those times have changed. All branches of modern science co-operate in archaeological research and although the flair of the researcher, his experience and his intuition continue to be valuable factors, the methods of investigation and checking supplied by physics and chemistry cannot be neglected. Aerial photography can reach places inaccessible to men and *see* at ground level what man himself does not see. Submarine exploration, still a very young science and subject to difficulties arising from the duration of the dive and to the obstacles imposed by great depths, has shown what it can offer. But in these cases the aeroplane and the diving-suit are only auxiliaries. With electrical methods of detection and examination of sites, the study of sediments to determine the nature of "invisible" objects according to the traces they have left, the dating of these objects according to the fluorine content, carbon 14, the magnetization of terra cotta and dendrochronology on the other hand, the results obtained are those which man would never have obtained by himself.

The first of these new techniques concerns the localization of objects and the determination of their nature. For this purpose, the electro-magnetic detector and the method of equi-potential lines give excellent results.

The first experiments in detecting metal objects buried in the earth by the use of the electro-magnetic detector took place in 1947 at Senlis. It had been realized that the apparatus used by the military to locate mines might have a peaceful function in the service of archaeology. At the same period, du Mesnil du Buisson was using this apparatus to search the sub-soil of Notre Dame de Paris for any metallic objects which might be there. The results were so conclusive that the position of the lead coffins could be traced on the flagstones in chalk. The apparatus reacts in the same way to the presence of all metals and it is therefore impossible to determine the nature of the object shown by the oscillation of the needle on the dial and the characteristic whistle which increases in intensity as the object is approached. A nail or an old tin affect the detector in the same way as an archaeological find. Research therefore remains very problematical and cannot go beyond the experimental stage.

The prospecting at Senlis revealed that the detector also reacted to the presence of baked clay and that the reaction was more active the older the clay. Modern bricks provoked almost none at all. "An unforeseen and remarkable result arose from the method advocated by du Mesnil du Buisson: with the aid of this electro-magnet apparatus one can sketch the shapes of buried brick walls, particularly the general outlines of antique rural buildings which are numerous in the fields and woods of our countryside. Burnt during the great Barbarian invasions, the only remaining trace of their presence is a thick layer of tegulae, collapsed roofing lying just below the surface of the soil."[1]

Hitherto, French detectors could scarcely act at more than five feet below the soil. Swiss military detectors had an even more limited range of action, ceasing to operate at a depth of more than ten inches unless the object to be detected was exceptionally large. That is why the experiments carried out by Bandi and Heller-Tarnuzzer in the palafittes of Bleiche-Arbon and Lake Ogoz respectively did not achieve the anticipated results. In these cases errors also resulted from the presence of stones containing iron, which affected the apparatus in the same way as the metal itself and further complicated the work of the archaeologists.

The equi-potential lines method was used for the first time in England in 1946 in excavating a neolithic site. A year later, when the technique had made further progress, it helped Mexican prehistorians to make the very important discovery of the "man of Tepexpan".

As far as the shape and nature of vanished objects are concerned, the study of sediments (in certain circumstances) has turned the phantom object into reality. The impression of the oxen harnessed to the royal chariot in the tombs at Ur, discovered by Woolley, for example, or the wooden caskets in the prehistoric cemeteries of Silesia, or the wooden sarcophagi in Egypt all had been unable to resist the passage of time, but their imprint had been preserved. This had already been the case at Pompeii, where the corpses caught in the flow of lava had decomposed but the archaeologist had been able to pour plaster into the empty space once occupied by the corpse to obtain what appears to be a very striking moulding of the deceased and is actually his filled-in silhouette outlined on the lava.

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[1] Unpublished report by Georges Matherat, cited by A. Laming in *La Découverte du Passé*, Paris, Picard, 1952.

The way in which the decomposition of a corpse transforms the chemical nature of the soil in which it has decomposed renders valuable service to the archaeologist when he endeavours to discover the contents of a tomb in which nothing has been preserved. "In certain circumstances, particularly on sites strongly impregnated with water, the albuminoids of the flesh are decomposed and replaced by fatty matters that the ammonia of the fermentations transforms into ammoniacal soap called *adipocere*. As a result, insoluble calcereous soap may be formed which will persist indefinitely and make it possible for research to be carried out into the fatty acids which have formed it. In a tomb where the skeleton has not been preserved, as is most frequently the case in acid soils, research into the fatty acids can not only determine the position of one or several corpses, but, if the samples are sufficiently compact, the virtual silhouette of the human or animal corpse (because certain protohistoric men are buried with their chariots, horses and dogs) may appear on the canvas where the control figures are distributed."[1]

In the same way, the remains of food adhering to prehistoric pottery have been identified, while the pollen breathed by a reindeer or mammoth, fragments of which have remained in its nostrils, has revealed on analysis the nature of vegetation in a given region at the time when that type of animal inhabited it. Thus we know that the pine and birch arrived in the Central Massif after the third glaciation of Wurm, whereas they only reached the Parisian Basin at the preboreal period, corresponding to the year 8,000 approximately—to speak of France alone. This gives some idea of the knowledge to be obtained by methodical study of an archaeological deposit, carefully investigated—the analysis of pollen making it possible to determine the period of certain human habitats.

When the archaeologist has set in motion the various methods of detection and chemical or geological analysis of the objects concerned, he turns his attention to finding out their age, and at what period they were fashioned. Hitherto stratigraphy was almost the only means of reaching definite conclusions, assuming that the deposit in question was contemporaneous with the geological bed in which it was found. This was not always accurate. It is in fact known that the overturning of the strata by clumsy, ignorant or careless excavation, or fortuitous events, can provoke grave confusion. The error is immediately located and rectified when it concerns an English penny discovered in the lower remains of Harappa (where its presence even in the upper remains was barely explicable) or of an empty soda-water bottle in a prehistoric South African site, but there are cases where doubt could arise. Remember the furore created in archaeological circles a few years ago by the discovery of Roman money in South Africa. All sorts of hypotheses were constructed discussing possible connections between Rome and Rhodesia. They did not even seem at all improbable until the day it was learned that these coins had been lost during a journey by a settler who was an enthusiastic numismatist.

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[1] *L'Etude des Sédiments*, in *La Découverte du Passé*, 1952.

In the majority of cases, in Mesopotamia for example, or in pre-dynastic Egypt, the location of the object in such or such a layer only gives grounds for the relative dating of the sequences which determine its succession, but leaves the researcher in ignorance in respect of a fixed date, as, for example, the beginning of the Christian era, which generally serves as a point of departure in either direction. Naturally, therefore, scholars have for several years been seeking some absolute means of dating objects, permitting location in time with the minimum chance of error.

These new means are: the determination of the content of fluorine, measurement of the quantity of C.14, the calculation of the thermoremanent magnetization of terra cotta, the dating of lava and varvas (especially interesting to the geologist) and finally the study of the age of wood, by dendrochronology. These fairly new sciences, which were scarcely known a dozen years ago, have made immense progress.

The dating of fossilized bones by the analysis of their fluorine content was already attempted at the beginning of the nineteenth century by the French chemists Fourcroy and Vauquelin, and later by the Englishman Middleton. They all based their work on the principle that bones and teeth buried in the soil absorbed fluorine from water which impregnated the subsoil. The rate of fluorization is known and it is therefore easy to determine how long a bone or a tooth has been in the earth, by the calculation of its fluorine content. All categories of bones, horn, and ivory receive ions of fluorine, pick them up and retain them.

Unfortunately, this method has only limited use, as the amount of fluorine varies greatly according to region. For example, it is inapplicable to tropical countries. Kenneth P. Oakley who utilized this process to determine the ages of different remains found in the same deposit (the theory of geological layers being ineffectual for this purpose) noted that, in a region where the amount of fluorine is moderate, neolithic can barely be distinguished from Roman bones.[1]

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[1] K. P. Oakley, *Fluorine and the Relative Dating of Bones*, *Advancement of Science*, London, 1948.

The dating of organic remains by the Carbon 14 method is much more certain and in wide general use today; although its discovery is recent.[1] The initial hypothesis by Libby was only made in 1946, and the method only left the experimental stage with Merril in 1948. What is Carbon 14 or, as it is generally written, C.14? It is a radioactive body, originating from cosmic radiation, of which the constant is so certain that the time between the moment of death of the substance and the moment when analysis of its remains begins can be calculated. "The radioactivity of the carbon, the quantity of which is always the same in a living being because it is always renewed, declines regularly over the centuries in dead organic remains, charcoal for example, and reaches half its original quantity at the end of a constant period of about six thousand years. Another six thousand years and it is divided by eight, and so on."[2]

The cosmic radiation received by the earth and more or less equally divided over the whole surface, amounts to about 20 lb of radio-carbon a year, which is added to the quantity, estimated at 80 tons, already existing on the globe. As the loss of C.14 equals its growth, this quantity of 80 tons remains more or less unchanged. The chemical process performed by the cosmic rays is as follows: the neutrons acting on the nitrogen in the air, transform it into C.14, and this C.14 is found in all organic matter. As a result of this, knowing the quantity of carbon contained in a piece of dead wood at the very instant when life ceased, it only remains to calculate the quantity of C.14 still existing there with a geiger counter. It must be clearly understood that this procedure is only valid if the approximate age of the wood is known in advance. Because of this, the first experimenters with C.14 chose archaeological remains which were already dated or easily dateable. Libby examined cypress and acacia beams originating from Egyptian tombs that had been precisely located in the history of the first dynasties: the tombs of Sneferou at Meydum and Zoser at Saqqara. Then other objects from less ancient periods were studied, a fragment from the funeral barque of Sesostris III, a plank from the coffin of the Ptolemies. In every case, the experiments were conclusive and the agreement between the historically known dates and the figures supplied by C.14 has considerably diminished the chance of error in time-scales of remarkable precision.

As Egypt is the country whose chronology is best known, the same type of experiment was made on grains of corn found in Fayoum at the bottom of prehistoric huts, the period of which was still very

[1] Albert Ducrocq has given a very clear and very complete description of this method in his book *La Science à la Conquête du Passé*, Paris, Plon, 1955.

[2] *La Découverte du Passé*, *op. cit.*, p. 184.

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much open to doubt. Then the remains of other cultures were examined. Abbé Breuil, after analysing the remains of charcoal from the period when the great prehistoric artists decorated the caves at Lascaux, fixed the approximate age of these paintings at around 13,600 B.C. Charcoal again, this time found in Rhodesia, places the prehistoric industry of Nachifukan at 6,000 years old. In Mesopotamia, Braidwood has brought the reign of Hammurabi nearer by finding that houses constructed during his reign were 3,045 years old. So precise are the calculations that figures as exact as these can be achieved. But archaeologists always allow a margin of error of one to two hundred years when several thousand years are concerned.

Examination of the famous Dead Sea Scrolls with the aid of C.14 confirmed what the scholars already knew, i.e., that they were "contemporary with the birth of Christ". But the margin of error did not make it possible to confirm whether they were before or after the Birth—which would have been of primary interest to historians of religion.

Today, there is no country in the world where C.14 has not been successfully used. America was naturally the first and the most generous to supply objects for analysis, as the first scholars to work with the method were Americans. It was particularly useful in clarifying the problem of the civilization of Folsom, the subject of violent argument among archaeologists. Thanks to a burnt bison bone found in Texas, this civilization can now be placed between 8000 and 7000 B.C. By the same process, sandals woven in rope discovered in a grotto in Oregon show that the Indian who wore them lived over 9,000 years ago.

Japanese scholars have made liberal use of C.14 to find out the antiquity of their prehistoric and proto-historic sites. The Australians have used it to determine the period when the Tasmanian civilization (which peopled Australia) flowered in a continent which is so poor in natives today. The Tasmanians came from Indonesia at a time when, it is thought, glaciers still connected the Straits of Timor—about 6500 B.C. In the case of Australia, the information procured by C.14 is particularly valuable as all other methods gave only very vague and inconclusive results.

Research with C.14 is immensely efficient but its employment is still limited. In the first place, it can only act on organic remains radioactivated by cosmic radiation. Secondly, and most important, a relatively large quantity of the remains is necessary for analysis to have full results. At least 10 grammes of carbon is required for each measurement, and the minimum is two measurements. These figures apply to charcoal. Where vegetable remains such as mats, baskets, grass, reeds, or grain are concerned, the quantity required is

200 grammes; 500 grammes for bones, horns and claws. "The quantity necessary varies as a function of the carbon content; for example, 2 kg.200 is necessary for teeth (because only the enamel is usable), ivory or carbonized bones, and 700 grammes for shells, on condition that these are in a perfect state of preservation."[1]

When it is considered that research into the radioactivity of carbon is only a dozen years old, we can but marvel at the results already obtained, both from the point of view of the method itself and of the precision offered to archaeologists. The quantity of material destroyed in the course of experiment obliges them to work only on objects of quite large dimensions. Rarity renders destruction catastrophic where small remains or unique material is concerned. It would also be very valuable if C.14 could analyse prehistoric bones more effectively. But here it comes up against the fact that, completely radioactivated as it is, the bone can not always give the full service expected of it. "The bone", writes Hallam L. Movius, one of the pioneers of C.14, "can only be used when it has been carbonized in a fresh condition. When it has been entirely burned, as is the case in most prehistoric incinerations, it loses all interest, because the carbon it contained has disappeared entirely. In sub-fossil bones where the carbon has not been fixed by the beginnings of combustion, the action of the soil on the porous substance is such that what remains of organic matter becomes both too scarce and of too uncertain a composition to be submitted to analysis. Thus, only slightly carbonized bones remain of use."

With earthenware, it is not cosmic rays which are relevant, but, strange as it may seem, the magnetism of the earth. Earthenware is unamenable to C.14 and until quite recently was only datable by the age of the geological strata in which it was situated. As a result, in Egypt, Mesopotamia and Iran it could only be placed in a relative sequence, when it was not associated with objects which could be dated in an absolute manner. Now, however, its actual age can be found by the determination of its thermoremanent magnetization. In other words, earthenware records in its very composition the position of the magnetic field of the earth on the day of its firing.

Given the variations in the magnetic field, which change from year to year and from century to century, a table of concordance can be established between the position of the field and the condition of pottery, the age of which is known, for a number of guiding dates. As a result, the thermoremanent magnetization of a piece of pottery of unknown age will enable this age to be discovered by reference to the variations in the magnetic field. Discovered and perfected by

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[1] Hallam L. Movius, *Le C.14. La datation des matériaux archéologiques et géologiques par leur contenu en carbon radioactif*. In *La Découverte du Passé*, *op. cit.*, p. 216.

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M. E. Thellier, who published a masterly thesis on the subject in 1928, the method is in current use today. Thellier developed an idea which Folgheraiter had expounded in the nineteenth century, working with Italian earthenware of a definite age (from the fifth century B.C. to the second century A.D.—a very wide field of observation). It was still important to know what angle the vase itself had made with the axis of the earth in the oven when it was fired, and for this reason Folgheraiter first used vases whose shape showed that they had been fired in a vertical position. "The curve of magnetization can thus be determined on the surface thought to be horizontal during firing."

The first results were extremely interesting. Thellier's comparative examination of thermoremanent magnetization covered Etruscan vases, Greek vases, red pottery from Arezzo, and Pompeian ceramics, giving samples ranging from the eighth century B.C. to the Christian era. The experiment showed that, in the case of Etruscan vases, the curve was feeble and austral (South pole beneath the horizon); with Greek vases, the curve changed according to the period: feeble and austral in the seventh century, nil in the sixth, becoming clearly boreal and fairly pronounced (20 degrees) in the fourth; the Aretine pottery of the first century B.C. revealed an even stronger boreal inclination, 60 degrees; and over 65 degrees was reached with the Pompeian vases from the beginning of the first century A.D.

The method appeared conclusive until a Swiss scholar, Mercanton, by studying the ceramics of the lacustrine cities of his country, obtained results which, if not directly opposed to those of Folgheraiter, were at least different. This uncertainty undoubtedly discouraged scholars, since Thellier did not resume this type of research until 1939. In a far more rigorously scientific frame of mind, he then determined its principles and constructed a more detailed measuring apparatus than the empirical work of his predecessors. In his book, *Les Problèmes du Géomagnétisme*, which appeared in 1950, he gives a résumé of his experiments over a twenty-year period and defines both the means and the conclusions of his method.

Thellier first worked on bricks from monuments of a known age, in order to determine the orientation of the magnetic field in Paris between the year 1400 and the present. The curve of the inclination between these two dates reached its maximum point in 1730 with 74.30 degrees. It could be taken as a definite fact that terra cotta records both in intensity and in direction the terrestrial magnetic field in which it has cooled. In order to measure the intensity of the magnetic field, and no longer only to determine its direction, Thellier then separated bricks from Gallo-Roman monuments, also belonging to datable archaeological periods, such as the Arenas at Fréjus and the Thermae of the Emperor Julian at Paris. In the course of this examination he discovered that "the intensity of the terrestrial magnetic field in France during the Gallo-Roman period must have been much stronger than its present intensity, and the magnetic moment of the globe must have significantly diminished in the fifteen or twenty centuries which separate us from the firing of the objects studied".

No more than in the case of C.14 can we expect the measurement of thermoremanent magnetization to dissipate all enigmas. For the magnetization to be perfectly calculable, a number of fairly unusual conditions must be fulfilled. In principle, it is first necessary to know the exact age and position of firing of the sample-object. As far as position is concerned, pottery found at the very place of firing would, of course, be the most instructive. The ideal object is the oven which still holds ceramics and that, it can well be understood, is very rare. The conditions of firing need not be known, apart from the nature of the oven and the technique of the men who, at such a time and in such a country, fired their pottery in this particular way. Vertical firing and horizontal firing do in fact give different results. As valuable as this method is and useful though it be to the geophysicist and archaeologist, it is still at the experimental stage. The discovery of twenty-eight levels of ceramics, ranging from the Mesolithic to the Roman epoch, on one single site, that of the Candida Arena in Italy, has certainly done much to advance progress in this science.

Another method of dating which appears very interesting from its initial results and one which is rapidly establishing conclusive data, is dendrochronology. This is a science which enables the age of a piece of wood to be determined by examination of its circles of growth. Every child knows that it is easy to work out the age of a log: one just has to count the number of concentric rings, each representing one year. Dendrochronology does not limit itself to this calculation which, after all, would do little more than establish the age of the tree when it was cut down and which is completely useless to determine the period when the tree was alive.

To identify this period, Babbage conceived the idea, about a century ago, of observing the nature of the rings of growth, not only their number. While studying these rings, it was in fact noticed that they were not all of the same thickness and that this greater or lesser thickness corresponded to changes in climate, to periods of humidity or drought. At the beginning of the present century, Douglass became aware of the agreement between the succession of sequences of broad and narrow rings in cycles of eleven years, and the solar cycles.

The book by M. Ducrocq, which I have already cited, gives a

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very detailed and extensive study of the principles and technique of dendrochronology since Anter's work on the great sequoias of California, some of which are known to be over three thousand years old.[1] Here there existed a very full picture of the alternation of cycles. It was at all times important to take into account not only humidity and dryness, but to clarify more complex elements capable of explaining the anomalies of "sensitive rings", that is to say, the absence of rings, the presence of double rings, or rings of abnormal thickness. In 1937, the foundations of dendrochronology were solid enough for Gloc to write his basic book, *Principles and Methods of Tree-Ring Analysis* (Washington, 1937), which developed and complemented Douglass' theories and made less problematic the calculations of the curve of climatic variations during the last centuries, as established by the Director of the Arizona University Observatory.

Douglass applies the climatic scale of the last 3,250 years which he has drawn up from examination of his Californian sequoias, to wood found in the Indian pueblos of Colorado. These villages, which are interesting architecturally as well as for what they tell of the life of the men who once inhabited them, are difficult to date. Some have been abandoned for a very long time and without dendrochronology it is impossible to estimate when and for how long they were occupied. Analysis of the beams used in their construction enabled Douglass to give a very exact account of the pueblos at Showlow and Kaiwaku. It was found that they had been built about 750 A.D., and had been repaired, enlarged or reconstructed on several occasions up to the present.

The method devised by the American scholars was used successfully in Europe by Hoeg and Hustick in Finland, and particularly by de Geer in Sweden. In the same way as Douglass worked on the beams of the pueblos, de Geer analysed the pillars of the lacustrian establishments in his country, notably those of Lake Tingstade. However, as forests several thousand years old, like the American ones, do not exist in Sweden to serve as guiding points, he used the chronology of the Californian sequoias.

Although this appears chancy at first glance and subject to error, this connection between European trees and the giant sequoias proved in actuality both useful and exact. Its use became general in England, where the beams of the crannog at Ballinderry were studied in 1934 and at Romerick in Norway for the dating of the Viking tombs. But one wonders whether this connection between the vegetations of Europe and America is solid enough to serve as basis for a chronology of the piles of the palafitte establishments of the

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[1] *La Science à la Conquête du Passé*, Paris, Plon, 1955, Chap. VII.

French and Swiss lakes. To what extent can these piles, generally of pinewood, and of moderate diameter (20 to 25 cms.) obey the same laws as the giant thousand-year-old trees of America? The answer is as yet unknown. . . .

Aerial photography has rendered wonderful service to archaeology, even aiding the discovery and examination of submerged ruins—at the port of Tyre, for example. It is certain that cities submerged by the sea, such as Ys in Brittany, Vineta in the Baltic, and so many others, without mentioning the mysterious Atlantis, belong to history as well as to legend. The obstacles to submarine archaeological exploration are well known—the short duration of the dives, the difficulty of working in a liquid medium, and, above all, the vast layer of mud, of calcareous concretions which cover the remains. Braving these obstacles, teams of enthusiastic divers and archaeologists impatient to study new fields of excavations, continue to visit ships which have run aground or been shipwrecked.

Submarine archaeological exploration was really born at the moment when Clio donned her diving suit, to use the expression of M. Philippe Diolé, one of the most ardent of marine archaeologists. This was the moment when official and methodical research led scholars to discover at Mahdia in North Africa, not far from the site of Carthage, the contents of a Roman boat, loaded with works of art representing, it is believed, loot stolen by Sulla in Greece. Following the report of a diver who said that he had seen "large cannons" on the bottom of the sea at a depth of about 130 feet, research was initiated in 1908. It lasted until 1913 and was then resumed in 1949.

"First victory of submarine archaeology"—the exploration of the vessel at Mahdia was extremely rewarding, and Salomon Reinach, who only knew of the first discoveries, said that nothing so impressive had been discovered since Herculaneum and Pompeii. The "large cannons" of the diver were in reality columns over 13 feet high—and there were sixty or so of them—splendid works of art which today fill several rooms at the Museum of Bardo at Tunis, bronze and marble statues, vases, candelabra, and all the beauty which Greece surrendered to the greed of a Roman.

Was this Roman really Sulla? M. Jérôme Carcopino, who knows this strange character so well and has written an authoritative book about him, recognizes the hall-mark of the dictator's taste in the cargo at Mahdia, the predilection he had for mimes and buffoons, many figures of which have been found, and for exquisite furniture. It seems almost certain that the vessel which bore these treasures was loaded at the time when Sulla left Athens to return to Italy.

The epigraphists also rejoiced at a find made in the wreckage at Mahdia, which provided curious information on ancient methods of

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navigation. Amongst the columns, the works of art, the decorative marbles, there were also fragments of Greek steles bearing inscriptions. Why, it was asked, did Sulla's agent take aboard these broken plaques which really and truly had no use for him? In actuality these blocks served as ballast and the scholars who today read on them the decrees issued by Athenian magistrates may congratulate themselves on the foresight of a ship's commander who carried such valuable débris instead of random makeweight.

Fortunately everything is valuable to the archaeologist. The marble columns at St. Tropez, the cargoes of amphorae at Antheor and Albenga reveal a great deal about navigation and trade in antiquity, about the audacity of the sailors who carried blocks of marble weighing 38 tons, as in the boat at Saint-Tropez (it was in fact overloading which caused the shipwreck), about the export of wine, since the amphorae at Albenga and Antheor give the names of the shippers, perhaps even of the vine-growers themselves. Philippe Diolé's remarkable work[1] shows all that can be learned from the cork of an amphora in order to draw up a map of commercial exchanges in the Mediterranean at the beginning of our era.

But much still remains to be uncovered. "Has anyone counted all the ancient ports, determined their development in time and space?" asks Philippe Diolé. By no means. Interest has been shown in the most important, and this most frequently in order to broach vain discussions derived from the texts. Scholars are not always in agreement on the site of Troy, nor on the true width of Pahros, the ports of Carthage, the site of Corbilo and Tartessos. Hundreds of Mediterranean ports deserve a submarine visit. We lack monographs, studies, essays, devoted to submerged remains such as those which abounded at the end of the nineteenth century on remains found on land. . . . The task is enormous. . . .

[1] *Promenades d'archéologie sous-marine*, Albin Michel, 1952.

CHAPTER III

THE EXCAVATIONS

A cow catches its foot in a hole and breaks a leg. The owner is heart-broken. And yet, examining the scene of the accident, this hole turns out to be nothing less than a piece of a broken arch and he finds tombs and palaces slumbering unknown beneath the field. A cliff caves in at the edge of a river, gnawed away by the erosion of the water. Vases and metal objects appear in the fracture; an unsuspected treasure trove which leads to the discovery of an as yet unknown civilization. Arabs are gathering stones to make a tomb. They find a statue lying amidst the pebbles. Archaeologists called to these uninhabited places discover the ruins of an antique capital. A Cretan peasant labours in his field. An object shines in a furrow; mounted in a wide golden ring an engraved stone. The ring of Minos! The jewel passes from hand to hand and finally disappears. But there has been time for prints of the stone to be made. The place where the ring miraculously emerged is excavated, and a new chapter in Minoan history opens.

It is useless to go on multiplying anecdotes. Nearly all the great discoveries originate from chance, in archaeology at least. Some places have preserved the memory of their past greatness. Some towns have perpetuated themselves and it is here that new discoveries are the least probable, because often entire neighbourhoods have to be demolished before soundings can be taken. Others have disappeared, pillaged and destroyed by invasions, abandoned by their inhabitants. A change in climate, malaria, the silting-up of rivers, and a place, inhabited for thousands of years, is deserted. Nature moves back into the places man leaves behind. Sand covers the empires of central Asia, the desert advances on the capitals of the Pharaohs. Virgin forest swallows the palaces and temples. Immense towns disappear beneath the profusion of the jungles and in the mud of the swamp. Wild vegetation covers the Maya temples, the forests rise to attack the sculptured pyramids of Yucatan. The traveller is no longer able to distinguish anything of the dead town beneath the sand dunes of Gobi, or in the wooded hillocks of central America.

Some places have not been completely deserted. The capital has disappeared but a village survives nearby. Sometimes the name of this village preserves the memory of the great king who built the

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town five thousand years before, and the philologist, attracted by the similarity, precedes the archaeologist. Frequently, also, the inhabitants of the village, the repositories of old traditions, guard the memory of those glorious thousand years of which no visible trace remains. They talk of buried treasure and only fear of the spirits prevents them going and digging up the ground. Until the end of 1936, the ghosts of three Arabs, said to watch the entrance to a Cretan grotto, prevented exploration of a site where the most valuable discoveries have since been made. The natives may also draw casually on the débris near their village to build their houses, sometimes incorporating fragments of bas-relief, pieces of statues or stone paving, in their dwellings, or sometimes throwing this precious débris into the lime kiln. And the traces of some ancient town disappear for ever.

The indifference and the enthusiasm of the natives are equally dangerous. Distrusting foreign scholars, they often conceal the sites of magnificent discoveries. Rather than see the spirits of the earth upset and the sleep of the dead disturbed, the Chinese until recently multiplied the obstacles and paralysed the research of European scholars. This explains why Chinese archaeology is still a relatively new science. Elsewhere, the presence of a village cemetery was sufficient to paralyse all excavation in a Muslim country.

Very often also, Egyptian and Mesopotamian villagers turn into clandestine excavators and join in the treasure hunt on their own account without a thought for the scientific conclusions to which their discoveries might lead. They are only preoccupied with selling fragments of bas-relief they have torn off tombs and pieces of a statue they have broken up to make unidentifiable to the highest bidder.

The discovery of the site, as has been said, is mostly the work of chance. More rarely, ancient texts which mention the presence of a certain town in a certain place, have led to interesting finds. Reports by travellers and their descriptions of ruins they have encountered also constitute valuable documents. For the specialist or even the experienced traveller possessing some idea of practical archaeology the slightest sign is of interest. A certain plant grows in a certain place because the earth has been disturbed. A certain belt of land is sterile because piles of bricks or stones have lain there. The dust from baked bricks blends with the normal colour of the earth. An almost imperceptible projection in the sand, invisible to the pedestrian but perceptible to the rider, conceals a wall buried beneath a dune.

The considerable advantage derived from aerial observation is due to the fact that the land can be studied from a height where the slightest projection appears enlarged. Photographs taken in these conditions show details on the negative that the human eye could never have perceived. Even in 1906, Sharpe was able to obtain striking photographs of the ruins of Stonehenge by this medium. In 1920, Th. Wiegand employed this method for his explorations in Palestine and at Sinai.[1] But it was the work of O. G. S. Crawford and A. Keiller especially which attracted the attention of the scholars and the public to this new use of aviation. After using the method to reveal unknown parts of Stonehenge, notably the great avenue discovered in their 1921-23 campaign, their publications revealed all the possibilities of the new technique.[2]

Crawford used the method in particular to bring out traces of unknown antiquities in the English countryside. His book[3] gives the results of these observations. At the same period, French military aviation in Syria and Mesopotamia also supplied information of interest to archaeology. In 1929, aerial photographs more than anything else revealed the importance of Zimbabwe, the mysterious capital in Rhodesia. The observations of Insall at Woodhenge, the photographs of Hatra, the Parthian town destroyed by Shapur, those of the fortifications of Tell Alij in Iraq,[4] are striking documents. None of the many descriptions of the enigmatic temples of Malta, with the twin oval sanctuaries of Mnaidra, can replace examination by aerial photograph. Instances where this new method of archaeological observation has achieved valuable results are innumerable. Colonel Lindberg thus discovered unknown temples in the forests of Yucatan, Mr. Crawford followed the outline of the Median Wall, and the Shipper and Johnson expedition used an aeroplane, specially constructed for Andean heights, on its expedition to Peru.

A French archaeologist, Père Poidebard, was the first to develop aerial observation into a fruitful method of archaeological study. At first he met with the obstacles which hamper all pioneers. These he recalls in his book *La Trace de Rome dans le desert de Syrie*:[5] "The use of aerial observation as the principal instrument of archaeological exploration was still a very hazardous enterprise in the archaeological circles of 1926–27, the date of my attempts with the method, and it raised more than one doubt and more than one smile from the specialists."

"By experiment", writes M. Franz-Cumont in his preface to the above work, "Père Poidebard gradually calculated the most favourable working conditions, the most suitable average altitude, the times when the light was the most propitious, the transparency of the atmosphere opportune or its opacity prohibitive. In the early morning or late hours when the shadows lengthen on the bare steppe, the rays of the sun skim the surface of the earth, making slight reliefs project where a pedestrian would scarcely notice the slightest irregularity. The shots make it visible and photography can trace the line of a vallum, the rectangular stockade of a camp or the regular outline of an entrenchment. Much more, the lens can even perceive things which completely escape the human eye, luminous rays to which our retina is insensible can act on the photographic plate. Thus the presence of ruins buried in the bosom of the earth is revealed because the actinism of disturbed soil or soil mixed with limestone is not the same as that of virgin soil. Or again, when the autumn rains turn the desert green or when the heat of summer begins to scorch the grasses, the different colours of the vegetation disclose walls running below the surface of the land. Even in the burning hours of the day when the heat of the *hamid* makes the air vibrate and brutally throws back the blinding light, and when a fine mist of sand gleams in the atmosphere and softens the contours, perfect negatives have been obtained—strange when one considers that one is operating in unfavourable light, facing the flaming sun."[1]

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[1] See Theodor Wiegand, *Sinai Wissenschaft, Veroffent.d. Deutsch-Turkisch Denkmalschutz*, Berlin, 1920.

[2] *Wessex from the Air*, Oxford University Press, London, 1928.

[3] *Air Survey and Archaeology, Ordnance Survey Professional Papers, No. 7*, 1924.

[4] See *Illustrated London News*, June 29th, 1929.

[5] Paris, Geuthner, 1934.

While studying the region of the Syrian Upper Gezira from 1925 to 1929 Père Poidebard discovered the possibilities opened up by aerial observation. "To the north of the Euphrates, in the Habour basin, the network of ancient roads seemed to me clearly marked out by the ancient tells of the steppes. The innumerable tells or artificial hills which strew the plain of Upper Gezira, seem from the level of the earth like troops in disorder. But from a height of five thousand feet they were strictly aligned. A glance at the map of the sites of the ancient Assyrian and Roman towns convinced me that I was looking at the whole network of ancient communications, marked out by these remains of ancient agricultural localities or fortified posts. Descending in very slow circles at a very low altitude above these tells, I noticed that in slanting light many details appeared on the flat surfaces and on the slopes, while at ground level the grassy covering seemed perfectly intact. Between the Tigris and the Euphrates, nearly all traces of the Assyrian and Roman civilizations have been levelled up by successive destructions and Persian, Arab and Mongolian invasions. Earth, borne by the wind over thousands of years, has covered the steppe with a uniform layer leaving no ruins visible. And no ruin appeared there until aerial observation disclosed the ancient sites."[2]

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[1] Poidebard, *op. cit.*, p. VI.

[2] Poidebard, *op. cit.*, p. 4.

The work of Père Poidebard on the Syrian *limas* thus provided interesting data on the technique of aerial observation. But there is no question of this replacing observation at ground level. "Whenever possible, excavation of the soil will follow aerial observation. Aerial observation prepares the way for the excavation of the earth, directs it and controls it. By its rôle in historical geography it is a valuable help, making it possible to carry out preliminary studies of the earth and also save considerable time and expense. It cannot, however, replace research into the soil. In physical geography, a map established from photographs taken from aeroplanes must be based on geodetic points measured on the earth, a whole network of points determined topographically, with dimensions measured by barometer."[1]

Aerial photography, however, gives unequalled precision and eliminates all approximation. The Roussilhe process in particular gives a precision of scale of strict exactitude, enabling cross-checking of aerial measurement and measurements on the earth. There are also other empirical means, such as taking an accompanying aeroplane (the dimensions of which are known) as linear base.

As far as the height of observation is concerned, Père Poidebard considers that flights at comparatively high altitudes (3,500 to 5,000 feet) should be limited to purposes of general reconnaissance, general views of strategic structures, rapid comparisons of two distant points, or general revisions. Flights at low altitude, which he made after 1929, proved more useful in the observation of detail. The average altitude here was, 1,000 to 1,300 feet. Thus, "the study of the highway monument of Oumm-al-Amad on the ancient way from Palmyra to Hit, where we found a second century inscription dating and determining the end of the road, was proved by flying over the site at a height of 17 feet with the propeller barely turning."[2]

A flight below covering cloud, making use of the reflected light almost parallel to the soil, showed traces which were invisible in sunlight. Finally, apparently unfavourable light has in certain circumstances revealed ruins completely imperceptible before, by taking advantage of conditions which would ordinarily be judged unfavourable to archaeological observations. "Bad light and the proximity of the earth make the slightest shadows stand out clearly in black on white. When the sun is rising, the obliquity of the lighting necessary to pick out the details of the site is maintained by reducing in proportion the height of vision of the observer. Unfavourable light in its turn brings out the slightest folds in the earth. . . . The aerial method of research can be used in deserts in tropical regions, in the middle hours of the day."[3]

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[1] Poidebard, *op. cit.*, p. 9. [2] Poidebard, *op. cit.*, p. 10. [3] Poidebard, *op. cit.*, p. 12.

Amongst the most important discoveries made by aerial photography are the *limas* of Chalcis, by Père Poidebard and R. Mouterde in 1945, the Etruscan sites counted aerially by Bradford in 1947, Schmidt's research in Persia, the examination by Hunt and Bradford of the area lying between the rivers in Apulia, Ofanto and Fortore, which made it possible to enumerate almost two hundred neoeneolithic dwellings, Roman villas and numerous mediaeval fortifications. The publication of the report by Bradford and Hunt did full justice to the effectiveness of this new method of prospecting.[1]

In 1949, Baradez published the results of his work on the *limas* of Numidia.[2] In Algeria, he found the outline of the fossatum which constituted the forward line of the *limas* which marked the boundary between the Roman establishments and the region frequented by the nomads, running along a length of over 750 kilometres. This bristled with defence-works destined to keep the latter away from the rich villas and fertile fields which surrounded them. It was noted on this occasion how wonderfully complete the arrangements for defence were, with forts, advance posts, watch towers and villages where the soldiers lived in periods of tranquillity, and how closely this arrangement, which was traditional with the Romans, resembled that found by Père Poidebard in Syria.

In 1947, aviation enabled the Russian archaeologists Tolstoff and Orloff[3] to find in the Khorezm region of central Asia remains of prehistoric and proto-historic establishments whose existence had till then been unknown. Mention must also be made of the striking photographs of terrace cultivation taken by Crawford in Rhodesia in 1950, and those by Williams in Siam, in the same year. There are also photos published in the outstanding work entitled *Découverte aérienne du Monde*[4] which explain the discovery at Thanh Hoa in Indo-China of an Annamite city built in 1400 by General Ho Ki-Li. This was a town, one kilometre square, which was surrounded by enormous walls. But these, contrary to the hopes of the usurper, did not prevent a return offensive by the Chinese. They razed the town to the ground barely seven years after its construction. Rice fields cover the site where previously the palaces and citadels of Ho were built. However, aerial photography revealed that the "ditches" of these rice fields reproduced the plan of the roads and houses of former times. Even the "forbidden city" was recognizable, enclosed in the town and opening on to the place where the two large routes which crossed the town intersected at the geometric centre determined by astrologers at the time of foundation.

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[1] *Siticulosa Apulia*, "*Antiquity*", December, 1946.

[2] *Fossatum Africae*, *Arts et Métiers graphiques*, 1949.

[3] Vivier, *Recherches archéologiques aériennes dans le Khorezm*, Bulletin de la Société préhistorique française, XLVI, 1949.

[4] Published under the direction of Chombart de Lauwe with the collaboration of numerous archaeologists, Paris, *Horizons de France*, 1949.

The same volume contains abundant material on the attempts made in England to establish a complete map of all prehistoric and proto-historic sites, Roman remains, megalithic constructions, and burial places in tumuli and in long barrows. The camp at Badbury Rings, in Dorset, raises its three elliptical ramparts on a chalk mound over 1,300 feet in diameter, and with its zigzagging trenches is an exact repetition of the Roman system of fortifications. The Romans and Celts occupied this site alternately until it was abandoned. In the same book, with its fascinating illustrations, is an aerial photograph of the famous White Horse of Uffington, in Wiltshire. This gigantic representation of a galloping horse, over 300 feet long, was cut in the cliffs on the Berkshire Downs and though it is almost impossible to decipher from the ground, it springs up with striking animation from an aerial photograph. Some archaeologists think it was cut by order of King Alfred to commemorate his victory over the Danes in 811; but it is probably much older. The period when the horse was considered sacred by the Celts and Teutons must be taken into consideration. The Gauls made the mare goddess Æpona one of their most venerated divinities. The White Horse of Uffington, visible only from the sky, certainly corresponds to this religious idea. This is also found in America, where there are holy images made to be regarded by the gods, and which man must not or need not see.[1]

Amongst the most curious and most instructive photographs in the *Découverte aérienne du Monde* mention must also be made of the megalithic alignments of Carnac in Brittany, the exciting outline in the sand of the desert of the ancient caravan route from Palmyra to Hit on the Euphrates, and the plan of the pilings of a Swiss lacustrian village. In order to make these pilings more clearly recognizable on the photograph, because they are deeply buried in the water, the archaeologist Eugène Pittard had the ingenious idea of attaching to each a float which exactly represents the position of each piling on the surface of the water. Another lacustrian city of prodigious archaeological interest, that of Biskupin in Poland, was photographed not by aviators but by a mechanical camera, fixed to a small captive balloon.

Botany has also come to the aid of archaeology by studying the principles and signs of differential growth. Here, in fact, we are concerned with remains which have been entirely levelled, and are covered by fields or vegetation. At first glance, it seems that these remains must be entirely lost and indecipherable. This is true for the man on the ground; but as he ascends, he notices—and the camera registers—differences in the colour of the cultivated land. The initial principle which serves as a basis for all the theories of differential growth was formulated by Chombart de Lauwe:[1] "The strength of the vegetation and, in particular, of the crops, is a function of the depths of the humid superficial soil from which they draw their food. But this depth is augmented when a ditch has been dug, and is gradually filled in by deposits of surface earth; on the other hand, it is diminished if a wall or a pile of stones have existed in ancient times on a given site. Vegetation is therefore more or less thick on the site of ancient levelled remains than on the surrounding land. This difference is generally invisible to the observer on the ground whose vision is too lateral and has insufficient perspective. On the other hand, it can be seen very clearly by the aerial observer as differences in colour. The traces of ancient ditches or excavations normally appear darker, those of ancient walls lighter than the background of cultivation. The intensity of these contrasts is naturally a function of multiple factors, such as the nature of the sub-soil, the nature of the vegetation, the period of the year when the observation takes place.

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[1] On the White Horse of Uffington, see also the work by C. & J. Hawkes, *Prehistoric Britain*, Penguin, 1943. This also contains aerial photographs of the Celtic fields of Fyfield Downs, tumuli (round barrows) of Oakley Down in Dorset and neolithic establishments of Skara Brae in the Orkneys.

A beautiful example, photographed by Major Allen, illustrates the importance of the seasons in aerial archaeology. The Roman villa at Ditchley near Charlbury (Oxfordshire) was photographed on the same scale at the end of June and at the end of March. The first document, obtained against a background of ripe grain, shows the plan of the buildings perfectly clearly, and the different rooms can be very easily discerned; the walls, completely invisible from the ground, are rendered by thin lighter lines, while the surrounding ditch and wells are marked in darker shades. The detail here is so clear that even excavation had nothing new to add. By contrast, the same site photographed in March, with ploughed earth, showed not the slightest trace of remains buried under the soil."

The same applies to submarine discoveries. The discovery of the ports and jetties of Tyre in 1935–36 by Père Poidebard, coming after his authoritative descriptions of the Syrian *limas*, 1919–1932, confirmed all that could have been expected of the technique. This applies particularly if observations are made at the same time as submarine expeditions, which have given such excellent results in the Crimea. A Russian archaeologist, M. Grinievitch, from the Academy of Sciences of Leningrad, has embarked on research into the site of ancient Chersonesus, near Sebastopol. Divers with diving apparatus found the ancient town near the present Kherson. The plan of its towers, walls, streets, and acropolis was drawn up. The ruins were even photographed with the help of special apparatus. One day, we may suppose those towns which have disappeared under the sea, such as the legendary Ys and Vineta, may be investigated as a result of co-operation between aviators and divers.

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[1] *Découverte du Passé*, Paris, Picard, 1952, chapter on aerial photography, p. 48.

Finally, mention must be made of the water diviner's wand as an instrument of archaeological investigation. It has led to the discovery of the Etruscan tombs at Capua, as a result of the work of an Italian woman, Mme. Mataloni.

When the site has been determined, the superficial study made of the position of the ruins, and the field defined and distributed to the various teams, the work of excavation commences. Naturally enough, different processes have to be utilized as the nature of the site requires. A cairn of stones cannot be cleared in the same way as a Maya temple devoured by trees and lianas, an Egyptian temple buried beneath the sand, or a Mesopotamian brick tell. The task is easier when a place has only been occupied once than in barrows where ruins are super-posed. When one reads, for instance, of the separation of strata showing that ten different towns have succeeded each other, it does not mean that the strata are easily detached and distinguishable at first glance. In geology, the nature of the land provides infallible reference marks; it is not the same in archaeology, where the foundations of a temple built at stratum VI, for example, may not only have crossed strata V, IV and III, but in some cases may even have penetrated through to the virgin soil. What belongs to the different periods must therefore be determined and this is not so easily done. It must also be occasionally assumed that an inhabitant may himself have been a collector of antiques. The discovery in the ruins of his house of objects used two thousand years earlier no more proves that these objects were always in use than the collection of a modern Egyptologist would give rise to belief in the survival of Egyptian techniques in the twentieth century A.D.

Excavation therefore must proceed with great caution. It is easy to remove sand, as at Tell el Amarna, but the question becomes more complicated in the presence of a heap of bricks, reduced to dust by dryness or reduced to mud by damp. The separation of walls from the earth surrounding them is not as quick or simple as is ordinarily believed. And the need to establish the plan of the excavated places immediately does not facilitate work. Particularly where super-posed ruins are concerned, where the separation of the lower ruins inevitably demands the destruction of the upper layers, description, photography and measurement of these are all the material that remains for their study, and if a detail which appeared insignificant at the time is neglected, then at a later date it may represent a considerable loss to science.

Processes of excavation also differ according to personal preference of archaeologists. Some advocate breaking the ground up into vertical trenches. This is obviously quicker than horizontal excavation, but the latter has the advantage of better preserving the objects found in their original position. Droop, for example, preferred to remove the earth in horizontal layers, because it fixes the strata as finely as possible. He pointed out that "in nine cases out of ten, the really valuable knowledge concerns the vertical position of objects, not the horizontal."[1] He regarded vertical shafts as completely insufficient and supported his thesis with examples from excavations in the Palace of Knossos, where the shafts produced nothing. Trenches are in all circumstances infinitely preferable and still more so the separation of each horizontal strata, in that it enables careful observation of the slightest modification of the soil, changes which were of enormous importance in the study of the sanctuary of Orthia at Sparta.

Tools for excavation also vary. Powerful machines are now used for large excavations. Technical progress has made it possible to bring them to the scene of the excavations along permanent tracks. Pumps to absorb water from inundated sites, powerful excavators such as the Wilford unit shovel and the Wilford unit crane, are used at large-scale schemes. The Abbé de Genouillac employed a sort of conveyor belt or a chain of buckets called the "grasshopper". This he found gave the best results at Tello.

To carry away excavated material, tip-trucks on narrow tracks are used, as well as river currents strong enough to bear away the earth, and even the winds. The Count du Mesnil du Buisson, in a book which remains the basis of all study of digging technique,[2] tells how he used the wind at Khan Sheikhoum to carry away part of the excavated material in the form of dust. Delaporte has also used this process in his excavations in Asia Minor and found it effective.

Droop lays special emphasis on the preservation of a specimen of the earth from each stratum, and makes no secret of the fact that he considers a spade and pick-axe far too clumsy instruments for certain cases. To eliminate all risk of damage to the objects he would prefer "a sort of bread-knife without a point" on condition, be it understood, that time and money do not count.

Before the removal of the objects begins, photographs, sketches,

[1] *Archaeological Excavation*, Cambridge University Press, 1915, p. 15.

[2] *La Technique des Fouilles archéologiques*, Paris, Geuthner, 1934.

descriptions and measurements establish as clearly and as completely as possible the state of the site at the moment of discovery. The whole scientific interest often rests in the manner in which the objects are placed, rather than in the objects themselves. Weigall[1] has described the unimaginable disorder of an Egyptian tomb at the moment of entry as though, he says, "the place had been visited at full moon by demented monkeys." Before a sarcophagus is touched, it is photographed from all angles and the position of the slightest object noted, and this often takes long weeks of work. Often, before the cover is lifted off a sarcophagus, several months of study have been necessary to determine the quality and the position of the numerous rings covering it.

The position of the objects in relation to each other and in relation to the whole, is often the most certain element in their dating and classification. The irrevocable character of excavations makes all too obvious what may be risked if they are pursued without taking the necessary precautions of making minute notes at every stage of operations. All archaeologists know this and follow the required process. But, when discoveries are made by amateur excavators, this detailed work may with the best will in the world be omitted by people who do not suspect the importance of the task. Weigall rightly stresses the danger to science of such absence of method which for a long time characterized even the work of scholarly and conscientious archaeologists.

"The archaeologist who lays bare an intact burial takes upon himself a grave responsibility. If we admit that the study of the ancient Egyptians is of any value to mankind, then we must allow that the excavator has a duty to the world to perform when he enters an ancient sepulchre and is confronted by the antiquities which are stored there. The objects which he sees in front of him are not his own; they belong to all men; and it is his business on behalf of the public to get from them as much information as possible. In the present state of the development of archaeology the value of a 'find' of antiquities often rests far more in the original arrangement of the objects than in the objects themselves. The sole interest of a scarab, for example, may be in the fact that it rested on the first and the second finger of a mummy; and the main value of the mummy may be found in the manner of its orientation as it lies in the tomb. Such evidence as this, however trifling it may seem, must of necessity be the basis of all knowledge of the history of a race; and the excavator who omits to record by means of photographs, drawings and notes every scrap of evidence with which he meets, commits a far greater crime than he could at once comprehend, and has

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[1] *The Glory of the Pharaohs*, Thornton Butterworth, 1923, p. 81.

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failed in his duty to the public. An item is for ever lost; and the history of Egypt is built up by means of items. . . .

"When he has removed the antiquities to a museum he has necessarily obliterated for ever the source of his information, and, unless the contents of the tomb are all duly photographed and recorded *in situ*, that obliteration is as calamitous as the actual destruction of the antiquities themselves. He may carry off to his museum, let us say, four bronze statuettes of no particular artistic merit or individuality. Their real value to the scholar may have rested almost solely in the fact that they stood at the four corners of the tomb to ward off the evil spirits of the north, south, east and west; and it is that piece of information rather than the somewhat mediocre objects themselves which must at all costs be preserved. . . .

"An old priest's philosophy may have been summed up in the burial of a magical figure of Osiris in the earth floor under his bed as a protection against evil, and a too hasty stroke of the pick may lay bare the statuette but at the same time obliterate the traces of the position of the bed, thus rendering the magical little god as meaningless as the thousands of others just like it which line our museum shelves. The point of an arrow lying below the dust of a royal skeleton may be shown by close observation to have been the cause of death, and a fact will thus be added to history which might have been lost had a rough hand scattered the ashes."[1]

Weigall cites as an example of the minute detail and precision which the archaeologist must bring to the study and description of the site, a question he himself was asked by an ethnologist. This concerned certain skulls he had discovered in the Egyptian tombs. He had published photographs of these which showed that some front teeth were missing. The ethnologist wanted to know if these missing teeth had been found in the tomb or if they were already missing at the time of death. The distinction was very important as certain African tribes, for magic or aesthetic reasons which are very little known, sometimes broke some of their teeth. This custom, which seems to go back to ancient Egypt, has been the object of profound study, and it was vastly important to a specialist in this line to know if the teeth of this Nubian skeleton were detached from the jaw before or after burial. Weigall was obliged to reply that, fearing that the tomb would be pillaged, he had cleared it more rapidly than usual and that this detail had been neglected.

Method, as we have just said, must be strict and precise. The amateur excavator is mostly regarded as a dangerous individual by professional archaeologists. Hence the Trustees of the British Museum have published a book aimed at travellers who might be tempted to undertake excavations. This book, entitled *How to Observe in Archaeology* was written under the direction of Sir Frederick Kenyon, by such eminent English archaeologists as Sir Flinders Petrie, Sir Leonard Woolley, M. G. M. Fitzgerald, M. H. R. Hall and others. It gives a résumé of what might be called the ethics of the pick and shovel, and emphasizes the fact that the discovery of rare, beautiful or curious objects is very useful but only really effective when it leads to definite scientific knowledge.

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[1] *Ibid.*, pp. 89–92.

The uncertainty of a science such as Etruscology, even today, does not arise from a scarcity of objects found. On the contrary, these are extremely abundant. But for a long time excavators thought it sufficient to empty the tombs of their contents to enrich public museums and private collections, without a thought for the scientific conclusions to which each discovery could have led. Very modest material such as fragments of bricks or pottery can tell the whole history of a race extending over thousands of years, when one knows how to make it *speak*; but an object of prodigious aesthetic or marketable value can remain dumb when isolated from its environment.

Archaeology must always seek what Count du Mesnil du Buisson very rightly calls the *evidence of things*: "As soon as we approach the history of antiquity", he writes, "with some detail or with facts which appeared secondary to their contemporaries—and which we nevertheless regard as essential—we most frequently find isolated evidence by uncertain authors of doubtful origin. The interest in appealing to a source which is not the evidence of men but the evidence of things is therefore understandable, to grasp the ancient facts not by what we are told of them, but by their own traces, their own residue. The excavator alone can do this. The documents he brings back are less explicit, but they are much more sincere. The arrangement of palaces and temples, burnt towns, ceramic deposits, bones dispersed after battle, industrial establishments have not been drawn up intentionally. Often they upset our calculations. But intentional sources most frequently deprive us of a clear and precise view, of the framework of events. Names and dates are certainly essential, but complaints of their dryness have been heard for a long time. By reconstructing the *milieu*, the excavator lends the facts a colour and a truth of primary value."[1]

It is necessary for the archaeologist to combine in himself a mixture of qualities and talents rarely found together. It is helpful if each member of the expedition is capable of drawing up a plan, studying the ground, directing the excavations, examining the objects, classifying them, describing them, photographing them,

[1] Du Mesnil du Buisson, *op. cit.*. p. 21.

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taking measurements and making chemical analyses. The archaeologist must be familiar with biology, ethnology, geology and botany. If he is not a good chemist he may commit the same error as a certain individual who plunged a bronze axe into a chemical bath in an attempt, as he thought, to clean it, and saw it immediately dissolve and disappear before his eyes. He must equal the best architect in drawing up a plan, and the most sure topographer in the survey of a site. He must be capable of repairing damaged machinery, of talking to the natives in their own language, of deciphering ancient inscriptions and of copying and taking impressions of them. To him also falls the task of measuring the skeletons and observing their skulls and bones in the same way as a professional anthropologist.

He must also be able to study the ground like a geologist. "Geology", writes du Mesnil du Buisson, "explains the appearance of the countryside, the character of the habitat, the flow of the water, etc., etc. It enables materials found around the site to be distinguished from those which have been imported. The origin of these must then be discovered. It is interesting to note for example that the rose-coloured granite columns at Palmyra and the diorite steles and statues at Tello are made from foreign material. On the other hand, the gypsum at Nineveh and the bituminous limestone from Apadana in Susa are local. Morgan thus worked out that the diorite used in Chaldea had originated in Khabur; the turquoises at Babylon undoubtedly came from Sinai by way of trade."[1]

If the archaeologist does not know botany, he does not know the intrinsic nature of trees and plants, he cannot distinguish the nature and age of wood. But American scholars have recently studied the chronology of New Mexican pueblos by examining the trunks of the trees used to construct the houses. As a result of this the date of the ruins of these abandoned villages has been placed within the historic period. They were formerly thought to go back to remotest antiquity.

Such is the scientific knowledge the archaeologist must possess. But this is not enough. He must have experimented with certain techniques, so that he has learned to distinguish them when he encounters their products. There is some information which cannot be learned from a book and only experience can supply it. In ceramics, for example, the examination and comparison of fragments teaches more than any theoretical treatise. It is only by practice that a fragment of pottery which has been fired can be told from one dried in the sun, a piece made by hand from one turned on a wheel. A practised eye is needed to recognize the horizontal scores in the interior of a vase which reveal the effect of the wheel. It may be easy to tell if a vase has been thrown by its regularity and symmetry when it is intact. Similar statements cannot be so easily made about a fragment sometimes only half an inch in size.

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[1] Du Mesnil du Buisson, *op. cit.*, p. 75.

Modern archaeology has made the study of pottery one of its most fruitful methods of investigation. Petrie has used the shapes of the rims of a certain type of jar to discover the origin of sequence dates which today make possible the chronological classification of predynastic Egyptian periods. A fragment, however modest, remains strikingly eloquent for those able to interrogate it and make use of experimental tests to identify it.

In the same way as a connoisseur can distinguish the period of a Greek vase and the studio where it was made by the style of the figures decorating it, the manner in which it was thrown and the quality of the varnish—and all this from a few simple fragments—the archaeologist can draw analogous deductions from his own finds. The various periods of Cretan and Cypriot ceramics and the evolution of Chinese neolithic pottery, are as clearly defined today as the differences between the products of Exekias and Andokides, from very subtle indications such as the manner in which the pots were thrown, and the thickness of brush strokes. Technique and style are here equally instructive.

To all this intellectual and material knowledge, the archaeologist must add unusually distinguished moral qualities. The treasure hunt can frequently become a bitter and difficult struggle. Several scholars have been killed by natives or have died from illness or privation, overwhelmed by the heat of the Egyptian desert, exhausted by the fevers of India or central America. Their vocation demands a physical and moral endurance to enable them to triumph over all obstacles. Sometimes the only Europeans in the midst of natives, guardians of treasures which arouse every degree of greed, they must exercise relentless authority over their workmen. And when they have learned everything that can be learned in libraries they must still possess the great human virtues which can never be thus acquired: courage, patience, impartiality and the ability to lead men, to be both severe and kind, exacting and just. If a visitor to a museum or a reader of a journal, idly glancing over a report of an archaeological expedition, knew the cost of obtaining a result which may appear ridiculous to them and unworthy of so much effort, they would better understand the work of the scholars and help them by every means in their power.

No part of the evidence is insignificant. All indications must be taken into account, everything observed, everything noted. What appears useless today may tomorrow be the key to a new branch of archaeology. The Minyennes potteries discovered at Phylakopi on the Island of Melos in 1898 were neglected; they assumed considerable importance thirteen years later, when the excavations of 1911 brought them well into prominence. The instructive value of an object can never be known in advance.

At present and still more so in the future, reports of expeditions may appear tedious to a reader unaccustomed to their apparent "dryness", in that they lack picturesque detail and adventure, stories of haunted tombs and fatal mummies and descriptions of fabulous treasure. The scholar, on the contrary, looks on these enumerations of objects, descriptions of terracing, measurements and analyses, as the modest elements of all knowledge. Excavations at present are the surest means to discovery. They complete the texts, where these exist, and where none exist, replace them. Furthermore, the texts themselves have more frequently than not been revealed by archaeological research and in most unexpected ways at that. Numerous fragments of Greek tragedies, philosophical treatises and several poems exist, none of which was found in a library, preserved by foresighted scholars, but in mummy cases. Precious papyrus was thrown away to be used in the fabrication of a sort of coffin. The archaeologist's shovel brought to light lost pages which would have otherwise remained unknown.

"Excavations", according to du Mesnil du Buisson, "by a very searching technique, can entirely fill the gaps in other sources. The prehistorians have proved it by retracing the great stages in the origin of humanity . . . in the same way, in the historic period, excavations can reconstruct the stages in the history of a site in the absence of text. The excavations at Khan Sheikhoum provide an example: in the almost complete absence of epigraphic monuments, we found it possible to enumerate two towns from the bronze and four from the iron age, to recognize their general character, approximate period, the circumstances of their destruction and to gain some idea of the importance of the rôle they played."[1]

Using modern methods and means, so different from the processes of the ancient archaeologists who, all too often, turned to empiricism, we can gain a veritable lesson from excavations, even when these supply neither inscriptions nor pictures. The orientation of a temple can supply astronomical data which will lead to the date of its foundation. "Excavation", again I quote from Count du Mesnil du Buisson, "is already in itself a means of amplifying the power of our organs by permitting them to reach otherwise inaccessible remains. Any method which increases the power of our senses must be a most useful complement and must be pursued by every means man's ingenuity suggests. These means are physical and chemical. The first comprises sections and colorations, examination under the magnifying glass and microscope, all the methods more or less perfected, of measuring, weighing, spectral analysis, etc. The second group results from the reaction of bodies upon each other; this is analysis verified by synthesis or simply the study of chemical properties. These techniques naturally demand a keen critical faculty, but for that very reason they are most useful."[1]

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[1] Du Mesnil du Buisson, *op. cit.*, p. 21.

The eminent archaeologist then cites two examples from the excavations at Quatna where he discovered some very important buildings.

"While clearing the southern part of the temple of Nin-Egal towards the south-eastern corner of the large courtyard, we discovered two square concrete floors about six feet along each side. Each terminated at the east in round masonry tanks, the edges of which were level with the ground. We found that a small canal joined the floor and the tank. When the tanks were carefully emptied, it was found that they held numerous layers of chalk whitewash similar to that still used by the natives for the interior and exterior of their houses. With the help of a magnifying glass it was possible to count the successive layers of whitewash, which proved that the installation had been in service for a long time. An almost uniform light-brown dye was noticed between the super-posed crusts in one of the tanks. This did not have the colour of the chalk but could have been caused by watery clay. Towards the bottom, large brown patches seemed to have been spread by rubbing, as with a cloth or broom. The brown dye was found again between the flakes representing the successive layers of chalk. This was all that direct observations could reveal. Samples of plaster from several different points were examined at the laboratory in Paris. As it was thought that some of the remains showed traces of blood, we turned for assistance to the police department which was accustomed to carry out research into the stains left by criminals. Florentin, sub-director of the laboratory, succeeded in dyeing over the globules (which had actually existed for about 2,500 years) and thus rendered them perfectly visible under an enlargement of 250. He even obtained a micro-photograph, where the red blood corpuscles could clearly be recognized as those of a mammal different from men. Unfortunately, the blood plasma was entirely dried up and could not be revived, and it is therefore impossible to give more precise details. But even so, the information was most valuable and led us to believe that we had discovered Taurobolic chapels of great antiquity."[2]

The other example is perhaps still more impressive and shows how collaboration between chemist and excavator (who may of course be represented by one person) can give valuable results to archaeology.

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[1] Du Mesnil du Buisson, *op. cit.*, p. 22.

[2] Du Mesnil du Buisson, *op. cit.*, p. 23.

"The temple of Nin-Egal and the palace form a group on the mound of the church at Mishrife, comparable to the temple and the palace of Solomon on the Hill of Zion. The state of the excavated material in the buildings at Quatna made it immediately obvious that a violent fire had ravaged everything. Ashes and carbonized beams formed a layer in places as much as three feet thick. From the first soundings, differences in composition of the magma were apparent. The rocks composing it had not been changed in the same way by the fire. Knowing that limestone calcinates at about 700 degrees, that gold melts at about 1,000 degrees and basalt at about 1,300 degrees, we were able to form a sort of scale of temperatures reached in each part of the building during the fire. In the latter two cases, the globulous appearance revealed immediately that the calcinatory temperature had been reached; as far as limestone was concerned, a solution of hydrochloric acid made it possible to recognize the state of calcination. Thus it was possible to plot isothermic curves limiting the zones of the fire. The maximum zone, that is to say that of the fusion of basalt, was found in the room of the 'Great Vase'; the minimum, the zone of uncalcinated limestone, on the courtyards on the south and north sides. From this we deduced that these vast esplanades were open to the sky and that the room of the 'Great Vase' formed the centre of a vast core of glowing fire. (The room in question appears to have held rows of wooden pillars forming a sort of hypostyle.) Further excavations demonstrated both these deductions as correct. Furthermore, a temperature high enough to melt basalt could not have been produced without a violent draught, producing the effect of bellows at a forge; this hypothesis was fully confirmed by the discovery of doors permitting an intense intake of air. Orcel, of the Museum, also found microscopic globules of melted gold in the Holy of Holies in the Temple of Nin-Egal; in zones where the temperature had been lower, this metal was found in the form of fragments of golden leaves which undoubtedly covered cedar woodwork that had been carbonized."[1]

Beside the data provided by the material itself, further facts can be deduced from the observation and comparison of measurements. English archaeologists in particular have developed this into a new technique which they call "instructive metrology". It is as important, in its own sphere, as the wholly material use on the terrain of the "dumpy level", which has become their favourite method of identifying strata. It is based on the idea that certain numbers at certain periods and in certain countries constituted constants which could be referred to, whether these numbers had a religious or magical value or whether, on the contrary, they derived from natural dimensions afterwards applied by man to his various techniques. As its name indicates, instructive metrology is based on measurements. The conclusions it presents are of infinite interest, to judge by the example cited by du Mesnil du Buisson: "In our own time, we can tell whether a piece of modern machinery is of French or English manufacture by taking a few measurements so that we can immediately decide if the constructor used the metre or an English standard. Sir Flinders Petrie, in the course of his excavations, noticed that certain measurements in temples or palaces were exactly reproduced and that others existed in various multiples. In other words, certain lengths were divisible by the same number. It seemed to him that this need not be a coincidence but rather the result of some constant and so far unknown fact. He reasoned that if a fixed measurement had served as a standard and had been used by the architects of the buildings and by the artisans, it would undoubtedly be most frequently found at an exact number, as, for example, the cubits indicated by Ezekiel in the measurements of the Temple of Jerusalem. He took numerous measurements to the nearest millimetre on all the monuments he had discovered and on a large number of other buildings, and decided that in fact these length-types (divided as to length registered) certainly represented local units. If these measurements are compared with those still in use, they result in conclusive identity which can only be explained by historic transmission. The same system is applied by Mauss in an article entitled *The Column of the Elamite Temple at Chouchinek: Research into the Working Measurement*. The dimension of the bricks led him to the cubit and the foot used in Persia in 1150 B.C. These standards are found again in Egypt as long ago as the period of Cheops, in the whole Byzantine Empire and even in Europe."[1]

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[1] Du Mesnil du Buisson, *op. cit.*, p. 26.

When all the on-the-spot observations and measurements have been made, another question arises: that of removing the objects discovered. This is actually a moral and material question of the greatest importance, and many archaeologists are still discussing whether, on grounds of knowledge, it is better to leave the objects where they were found, *in situ*, or if they should be transported to a museum.

It is difficult to lay down a general rule. In principle, it is infinitely preferable to leave the objects *in situ*—every time this can be done without the risk of grave deterioration. Modern means of communication have made the most remote places accessible. Only the

[1] Du Mesnil du Buisson, *op. cit.*, p. 30.

position of the object in the place for which it was created, can explain its true nature and its essential purpose. The same object, stripped of its atmosphere, torn away from the architectural or spiritual whole of which it formed part, loses nearly all its meaning. Compare, for example, the Egyptian statues remaining in their temples with those in museums: the sacred atmosphere is considerably diminished when a divine image has been reduced to an object of curiosity lost in a heap of vulgarities.

A museum therefore should not absorb the results of archaeological excavations except in cases where it is not possible to leave them *in situ*, either because of bad weather or because of the greed of thieves, or when they have been acquired from people unable to give precise information as to origin and they are therefore delocalized. In these circumstances, it is preferable to shelter them in a museum where they will be well maintained and agreeably arranged for the instruction of the curious and of students.

On the other hand, purchases by museums often incite unscrupulous possessors of antiquities to break up works of art in order to get a better price. Thus, according to Weigall, the famous inscription from the tomb of Anena at Thebes, one of the most important texts from the beginning of the eighteenth dynasty, was broken into pieces a few years ago, to be divided between different museums. And, as happened with the dismembered body of Osiris, it is often the essential part that is missing. . . . The same thing happened to the admirable reliefs from the tomb of Horemheb at Saqqara which are dispersed amongst London, Vienna, Bologna, Alexandria and Cairo.

Another danger comes from resentful villagers and natives. One of the most beautiful pavements at Tell el Amarna, the masterpiece of Atonian art, was ransacked by nearby villagers solely to cause unpleasantness to the guardian with whom they had quarrelled. This makes it more possible to appreciate the institution of museums where objects, even if they do lose part of their atmosphere, picturesqueness and poetry, at least enjoy a peaceful survival. The removal of the sculptures from the Parthenon by Lord Elgin has been the subject of much debate and some sources condemn "Elginism" as one of the worst forms of vandalism. And yet they may owe their survival to this removal. It is quite convenient to study the fragments of the procession of the Pan-Athenians displayed at the British Museum. But the fragments which remained *in situ* on the Parthenon are practically invisible and we know them better by mouldings that can be examined elsewhere than by the originals remaining on the spot.

At certain periods, European scholars have had every licence to take the objects they discovered away with them; the present tendency is to leave them in the country of discovery. All countries have taken legislative steps in this direction, limiting the rights of the excavator. These restrictions, although inspired by very respectable motives of pride and national interest, are sometimes prejudicial to knowledge. For example, as a result of the great demand on the antique market for bronzes from Luristan, the government of the country took measures which so embarrassed the excavators and raised so many obstacles to export, that researches were paralysed and almost ceased—to the great detriment of the scholars and culture in general. The institution of national museums is obviously very laudable, but it remains equally obvious that it is difficult for the student to make the trip to Ankara to examine Hittite antiquities or to go to Baghdad to see the results of the latest Mesopotamian excavations. It would be much more useful to the cause of science if they were available to all in a great European museum.

To this, it is objected that the possibility of making mouldings and copies available everywhere, facilitates the work of the student. This is true and should be in more general use. It might even be desirable for an organization such as UNESCO to take the initiative and install museums of mouldings and copies in all large towns. These would not, as so often happens, be a dusty and fortuitous collection of odds and ends of works chosen at hazard, but a methodical presentation of a collection of masterpieces and objects which were essentially typical, an acquaintance with which is considered necessary to general culture. The crosses of Kells and Monasterboice and the shrine of Saint-Mangan would stand side by side with sculptures from the sledge of Queen Aase, the frescoes of Knossos (so precisely reproduced by Gillieron) with the bas-reliefs from the tomb of Ti, the statues of Khafaje with the sculptures of Palenque, and so on. The desire to preserve, combined with jealous nationalism, would no longer impede the diffusion of culture. Whereas it must be grudgingly admitted that very frequently mouldings and copies *when they are well done* have almost the same educative value as the original. (I do not of course speak of purely aesthetic value which derives from the matter itself, nor of emotional value.) These museums of well-made mouldings would frequently be much more instructive than the accumulation of so many galleries, formed of random gifts and fortuitous acquisitions.

The completion of excavations is another moral and material duty incumbent on the archaeologist. An incompletely explored site, abandoned when the results appear unsatisfactory, becomes a source of groping effort and errors for archaeologists if they are ignorant of research undertaken in the past, and turn their own efforts to the work. From this springs the necessity for publication. This is indispensable. Without it the most active excavations fail to make their mark.

Immense difficulties are caused by problems of transportation. Some of the objects dug up are fragile, and their removal runs the risk of destroying what the earth has preserved for thousands of years. Tablets made of dried earth, for example, need scrupulously careful treatment. When the archives of Tell el Amarna were discovered, the scholars to whom their purchase was proposed thought they were false. As a result, with one journey after another half the tablets were reduced to dust. The best way of preventing this is, immediately such objects are discovered and before cleaning, to place them into an iron box filled with sand. This is then placed in an oven where the bricks are left to bake gradually and then left to cool, also gradually. The earth which envelops them then falls off of its own accord or can easily be removed with a brush. Papyrus must also be handled with the greatest care; bronzes are subject to disintegration. In general, metal objects can be covered with a layer of hot wax which will preserve them from disintegration.

Wax is also used every time bones or skulls are transported. They are covered with paraffin so that they can be separated and removed. There are several recipes for these various tasks that experience teaches better than any book. In order to stick together objects which threaten to fall to pieces, Droop prefers a solution of tapioca to the cellulose solution generally employed. His method is excellent for dry climates but loses its effectiveness when the object is subjected to damp. Sculptures and bas-reliefs have also been covered with a very light solution of cellulose to prevent friable particles becoming detached.

Everything has at last been packed and placed in cases. Now it must be transported from the site of the excavations (which may be deep into the desert or virgin forests) to the nearest station or port. When very bulky objects have to be moved, it is sometimes necessary to cut them up in pieces to make transport possible. Seton Lloyd has told[1] how a great winged bull was discovered at Khorsabad in 1929 and had to be transported to America. It had to be taken by boat down the Tigris to Bassora, where it was put aboard a liner sailing for the United States. To cover the 15 miles which separated Khorsabad from the Tigris, there was only a three-ton lorry available and this broke down during the journey under the weight of the heaviest fragment, weighing 14 tons. Fortunately, it was near enough to the river to ask for help from a boat which tried to tow the sanded-up lorry by rope. But to the surprise of all, it was the boat which was dragged on to land by the immovable mass of the *keroub*.

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[1] *Mesopotamia*, London, Lovat Dickson, 1936, p. 17.

Another catastrophe involved the loss of part of the bas-reliefs discovered by Botta. The rafts which were transporting them foundered in the middle of the Tigris, dragging their load to the bottom of the river whence it was not possible to recover them. When we think of these rafts made by the ancient method of placing a light plank of wood on distended goatskins, we can only be surprised that the enormous Assyrian sculptures which we admire in the museums could survive a similar journey and reach the rooms where they are displayed for the joy of the artist and the information of the scholar without mishap. But the difficulties that must be overcome in transport are nothing to the dangers which may attend the objects if they are left *in situ* at the mercy of unscrupulous natives. Thus it was that one of the magnificent winged bulls from Nineveh which was left untouched, was mutilated by peasants. One of them broke its head to repair his wall, another who found the mass of sculptured stone disturbing, frightened perhaps by the majestic appearance of this formidable genius, sold it for three shillings and sixpence to a chalk merchant who calmly burned it in his cement furnace.

CHAPTER IV

THE SOURCES OF CHINESE CIVILIZATION

MANY COUNTRIES have been scratched, scraped and exhausted by generations of archaeologists, but China has remained almost intact. Her surface barely skimmed, she guards her secrets. And because it is generally the tombs which most faithfully preserve the facets of life, and because the tombs in China are surrounded by an atmosphere of terror-stricken veneration and religious fear, scholars have nearly always had to be satisfied with investigating the surface of the soil. This superficial examination (in every sense of the word) has given rise to erroneous beliefs and a great many inadequate opinions as to the antiquity of Chinese civilization.

China did little to facilitate a more correct knowledge of her past until recent years, since when archaeological studies have made marvellous progress. This is due to collaboration between Chinese scholars and European archaeologists, and also to political changes which have broken the thousand-year old carapace in which old China was enveloped, resistant to all innovation, leaning firmly on the antiquity of her rites, the venerable wisdom of her books, the unyielding excellence of her traditions.

Not long ago, for example, it was still claimed that no sculpture existed before the Han dynasty. It was thought that the depths of history had been plumbed with the Chou, in the twilight of a history which was still indistinctly mingled with pre-history and the mythical reigns of the first emperors—such as those, for example, who, lacking soldiers, raised an army of wild beasts to resist the Hun invasions.[1] Truth and legend mingled inextricably in the old chronicles. As these distant epochs were only known through the old books, there existed but a mixture of fable and historic annals, of symbol and diverse fact, of poetry, cosmogony, allegory, magical narrative, ritual formulae, from which it appeared very difficult to separate historical truth. The origins of Chinese art were discussed and even at that period it could be maintained with a certain amount of probability that it had been fertile, especially on the basis of what is called Scythian art or the art of the Steppes. It could even be claimed that the Chinese would have had no civilization if it had not been for Europe and Asia Minor. . .

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[1] See Marcel Brion, *La Vie des Huns*, Paris, Gallimard, 1931.

Archaeology teaches us to mistrust absolute affirmations. The excavations have taught that what appears a "truth" today will probably be seen as an error when tomorrow's discoveries invalidate what has been deduced from yesterday's finds.

This does not mean that we must make a clean sweep of all the acquisitions of Chinese archaeology hitherto. Certain work retains immense value, often only because it has shown the way to new discoveries. And when recording the gratitude that scholars must feel towards their predecessors, we must not forget the recognition due to the thieves and pillagers of tombs.

This may scarcely appear moral, and the misdeeds of clandestine excavators have indeed caused irreparable destruction. Their clumsy cupidity has annihilated most of the documents which would have been of the greatest scientific value. Despite this, thieves in China have been more daring and less superstitious than official scholars. They were not afraid of phantoms—which is already something—and they scarcely let tradition hamper them. They went where the archaeologists dared not go. With great labour, they dug holes into tombs around which malevolent spirits crept; they incurred the anger and vengeance of the ancestors whose sleep they disturbed. Admittedly, they were not guided by any disinterested desire for knowledge, but only by a taste for lucre.

Through these thieves, strange and magnificent bronze vases from the depths of antiquity began to appear on the Peking antique market. If he could sufficiently overcome his timidity to track down the source of these splendid spoils, the archaeologist would then venture on the track of the burglar. He did not scruple to take anything the pillager had left behind. He would even try to beat the thief to the discovery of an intact tomb, a venture which sometimes led to the exchange of rifle shots with a band of brigands, when two expeditions, drawn to the same place for different purposes, met and fought for the privilege of stripping the corpses. If it is thought that scientific interest can sanction all the violations of burial places and that it is only motives of greed that make the thief guilty, then the latter can indeed be called a criminal and the scholar celebrated as a benefactor to humanity. But, taking everything into account, archaeology which teaches the relativity of truth, can also provoke fruitful meditations on the relativity of morals. We must not be too severe on the despoilers merely because they act without diplomas and without official authorization from interested governments. With a certain revulsion we must realize that the action is almost the same, and if the ancestor finds himself awoken by intruders who carry away his bronze vases, his jade ornaments, even his bones, it is doubtful whether he draws any consolation whatsoever from the fact that they will all figure in a museum and serve for the enlightenment of posterity.

It is undoubtedly for this reason that the Chinese have regarded archaeologists with so much mistrust and have not facilitated their research—to put it very mildly. The thieves, unembarrassed by such scruples, had their hands much freer than the scholars; and they took advantage of it. But there was yet another factor: excavation of the soil would disturb the spirit of the earth; it would upset that harmony of the things of nature to which the Chinese attach so much importance.

Thus a sacred prohibition lay on the profane enterprise, as much to assure the sleep of the dead as not to disturb the spirits. However, this moral defence could not have been completely adequate. The Emperor Chi Huang-ti, had a marvellous and fantastic tomb (which is described in the annals) made for himself, with all the countries of the world represented in a sort of panorama in precious stones, where rivers and seas were depicted by streams of mercury set in motion by an ingenious mechanism and where grease candles were placed which were to burn for a thousand years. But he also had installed a subtle arsenal of armed bows and crossbows ready to draw, concealed in the body of the tumulus—a deadly warning to guilty visitors who might have had the imprudence to venture into the monarch's last abode. Until quite recently no difference was made between the pillagers, motivated only by greed, and the scholars, inspired by disinterested curiosity. Creel tells how some traditionally minded persons still regarded this innovation unfavourably. "In April 1934", he writes,[1] "the Chairman of the Examination Yüan, one of the highest officials of the Chinese Government, sent a circular telegram to various leaders urging that the government prohibit the excavation of ancient tombs at once. He pointed out that grave-robbing was formerly punished by cutting the offender into thin slices. 'Why', he asked, 'should those who practise this crime be exempted from punishment, and even paid salaries by the government merely because they call themselves scientists?' "

Resistance had also to be expected from the peasants, who did not like their fields being turned upside down. Add to this the obstacles imposed by the rigours of climate: wind, dust, torrid summers and icy winters. If it is remembered that the archaeologist must live in perpetual vigilance, surrounded by armed men, exposed to attack by bandits hoping to carry away the booty and only too willing to exchange gunfire with the scholars, provided that the harvest be rich in bronze vases, it is easy to understand that excavating in China was neither an easy nor a peaceful operation. Lastly, it must be pointed out that everything that was not ceramic, stone or bronze has disappeared as a result of the natural injuries of time. Nothing remains of the magnificent antique temples made of wood, nothing which was not written on stone steles or metal vases.

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[1] *The Birth of China*, London, 1936, p. 28.

Largely as a result of this, therefore, enormous gaps exist in our knowledge of the old Chinese civilizations, even though fertile and tolerably well preserved sites have yielded up everything they have guarded for thousands of years. Sometimes an insignificant stroke of chance is sufficient to put scholars on the road to major discoveries: the day, for example, when a peasant found pieces of bone while tilling his field, and offered them to the apothecary, dainty morsels of "dragons' bones" which he sold for a very high price because of their therapeutic properties. Little did he know that he was inaugurating one of the most exciting and fruitful chapters in Chinese archaeology. But how many of these "dragons' bones" were scraped, scratched, ground into powder, until it was discovered that these humble bones, covered with mysterious signs, represented a most precious treasure. They were the divinatory bones of the oldest dynasties, and told the history of the most antique civilization.

To what period does that civilization go back? It is very difficult to tell, because present excavations in China, as in Egypt and Mesopotamia, always place the dawn of culture earlier and earlier than yesterday's estimate. Man's presence in China has been found as far back as the Pleistocene age, i.e., nearly five hundred thousand years ago, and anthropological research tends more and more to maintain that the Sinanthropus Pekinensis belonged to the same race as the present Chinese. The works of Weidenreich in particular base this thesis on most convincing data. Creel writes: "Considerable skeletal remains of this early relative of modern man were found in the Chou-k'ou-tien cave, some thirty miles south-west of Peiping, by palaeontologists of the Geological Survey of China, under the general direction of J. G. Anderssen. The earliest certain finds were made in 1927. The several individuals found on this spot are believed to have lived in early Pleistocene times and to represent an offshoot from the human family tree somewhat later, and more human, than *Pithecanthropus erectus*, and somewhat earlier than Neanderthal man. Along with the bones were found rocks which have been accepted by Abbé Breuil and other authorities as purposely shaped, if crude, stone implements. China, then, ranks with almost any other part of the world in the antiquity of the time at which it can be proved to have been inhabited by man-like beings."[1]

From 1928 to 1935, Dr. Zdansky completed his discoveries by

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[1] Creel, *op. cit.*, p. 40.

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bringing to light important remains. "At the end of ten years of effort", writes Père Teilhard de Chardin,[1] "a whole series of human remains (six quite well preserved skulls, half a dozen lower jaws, several score of isolated teeth, and a few fragments of bones from the limbs), representing about thirty individuals, were extracted from deposits, often by blasting, as well as thousands of other fossil bones mostly belonging to long extinct types of mammals." These bones notably belonged to an elephant, two types of rhinoceros, an extraordinarily flattened type of forest deer, an antelope with spiral horns, a very large camel, a buffalo, a sabre-toothed tiger, and, in quantity, an enormous hyena, etc. . . .

It is not known whether this Sinanthropus, the ancestor of the present Chinese, always lived on Chinese soil. It seems that there might have been long periods of eclipse when the country seems to have been abandoned, though the reason for this is not known, while the presence of other prehistoric men has been recorded on other sites, differing totally in ethnic character from the Sinanthropus. In the same way, French excavations, conducted for the most part under the direction of Père Licent and Père Teilhard de Chardin, in the Province of Ordos (where curious objects probably originating from Hunnic civilization were also found), brought to light instruments of Mousterian and Aurignatian style, precisely similar to those found in Europe. As no skeleton has been found associated with these remains, it cannot be definitely asserted that the men who made them belonged to the Sinanthropus family. It is now known, as a result of excavations in 1933 and 1934 in a grotto formerly inhabited by the Sinanthropus, that another race, with the same ethnic characteristics as European Paleolithic man and very different therefore from its Mongoloid predecessor, followed them on the same sites. Where did these men come from? No one knows with any certainty. All that can be said is that the inhabitant of the ancient Paleolithic age was a Mongol, while the inhabitant of the recent Paleolithic age belonged more to the European family.[2]

The layer of loess which covers the traces of Paleolithic man, in some areas to a depth of 130 to 200 feet, separates this ancient culture from the new Neolithic culture. But it must be noted that all the Neolithic sites examined belong to recent Neolithic. No trace of ancient Neolithic has yet been found, and it may possibly be that China remained uninhabited during this period of several thousand years, or that incomplete excavations have not yet brought to light the remains of the period.

[1] *La Question de l'Homme fossile*, Paris, 1948.

[2] For the pre-history of China see: *Les Civilisations de l'Orient* by René Grousset, Volume III, Paris, 1930; J. G. Andersson, *Den Gula Jordens Barn*, Stockholm, 1932; Abbé Breuil, *La Préhistoire de la Chine, le Paléolithique en Chine*, Paris, 1928.

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A Swedish scholar, Johann Gunnar Anderssen must be given the credit for the principal discoveries on the Neolithic Chinese. Discoveries of capital importance were made almost entirely by chance, because Anderssen is not an archaeologist by profession but a mining engineer. While searching for minerals and coal on behalf of the Chinese Government, he quite fortuitously found some pottery remains under his axe, belonging to a type hitherto unknown, whose extreme antiquity was immediately realized. Encouraged by his find, he pursued his researches in the provinces of Honan, Shansi, Shensi, Kansu and as far as Southern Manchuria and was thus able to establish the vast extent covered by Neolithic culture—its very existence completely unknown until the day when a miner's pickaxe met a fragment of vase instead of a piece of coal. More than twenty years have passed since Anderssen's first work made this great advance in Chinese archaeology. Since then, continued excavations and the publications of reports have established the prodigious interest of these discoveries. Vases excavated are not only valuable in themselves and to the history of Chinese civilization, but also for the strange comparisons they suggest with other pottery, notably with that from the Aegean Sea.[1]

The first Neolithic period is characterized by the appearance of a strangely shaped vase, a sort of boiling-pot with three feet, which is called the tripod *li*. "Anderssen has suggested that it originated in the leaning of three pots with pointed bottoms together over a fire; someone then had the idea of making the three in one piece. The bulging legs bring the food in the pot into close contact with the heat. In so far as is known, this form and others developed from it are typically Chinese, unknown in other parts of the world."[2]

However, the hollow tripod so characteristic of China, is not exclusive to that country; analogous vases have been found in Peru. Besides, it is also possible that the immediate usefulness of the shape, which brought food into more direct contact with the fire (because food was even found in the feet of the vase) appeared obvious to American as well as Chinese man. Does this analogy prove an affinity between the two races? Certain sources even suggest unity of origin. Or does material necessity in similar circumstances arrive spontaneously at similar solutions?

The first Neolithic pottery, called Ch'i-chia-p'ing, after the site which produced the most abundant supplies, is characterized by a striking neatness and strength. "Unpainted pitchers in grey or reddish earth have been exhumed, with vigorous and projecting handles, decorated, where necessary, by nail or a tool with engraved designs in elementary geometrical shapes. Ceramics of rugged simplicity", writes René Grousset,[1] "that the untutored eye could barely distinguish from the general run of European Neolithic vases. But we must remember that we are in China. The simplicity becomes severe sobriety, the robustness and frankness of the shapes betraying in themselves the intrinsic quality of the material, contain the eternal virtues of Far-Eastern aesthetics."

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[1] See J. G. Anderssen, *Preliminary Report on Archaeological Research in Kansu.* Memoirs of the Geological Survey of China, Peking, 1925. *Early Chinese Culture.* Bulletin of the Geological Survey of China, 1923, and the work in Swedish cited above, an English translation of which exists under the title: *Children of the Yellow Earth*, London, 1934.

[2] Creel, *op. cit.*, p. 44.

Anderssen found another type of pottery at Yang-Shao in Northern Honan, different from that of Ch'i-chia-p'ing primarily in the shape, but more particularly in the decoration, of the vases. The tripod *li* predominated in the preceding site and the decoration was entirely engraved. Not only are the profiles of the vases more varied at Yang-Shao but, furthermore, they are all covered with painted decoration, surpassing in originality and beauty anything that Neolithic ceramics had hitherto revealed. In richness of colour and the astonishing ingenuity of motifs, sometimes depicting arabesques, sometimes stylized foliage, and sometimes submarine plants, a characteristic decoration of Minoan art, the pottery of Yang-Shao certainly corresponds to a very much higher level of civilization than that attained by the potters of Ch'i-chia-p'ing.

It is advisable to distinguish between the Yang-Shao vases of Kansu and the unusual vases at the very site of Yang-Shao because the repertoire of stylistic themes differs in the two cases. Grousset has given an authoritative résumé of these important distinctions:[2] "As Anderssen pointed out, many of the pots of the Yang-Shao period, especially those from Kansu, take on the shape of gourds or calabashes, enlarged towards the base. The decoration is often reminiscent of the texture of basket-work. Soon, however, the decoration —generally boldly drawn in black or brown on a lighter reddish or brownish base—attained unexpected elegance: spirals wound and unwound along the sides of the vases in a movement very pleasant to the eye, undulating lines fluctuated on the body in waves full of life, festoons of striking liveliness, streaks, stripes, rope-effects or snake skins, the vibrations of which were already great art. The spiral windings particularly, have the powerful rhythm as well as the freedom of Aegean sub-marine decoration."

What conglomeration of circumstances can account for the appearance of the same themes with analogous treatment in Honan and Crete? Can we suppose that cultural exchanges occurred between the two countries at some period, enabling the movement of aesthetic motifs from the Mediterranean to the Yellow Sea? What dreams came in that period of sleep in which China was plunged during the thousands of years of ancient Neolithic? Did the Non-Mongolian Paleolithics fertilize Asia and the Aegean Sea at the same time? It is impossible to answer these questions. It is as impossible to reject any hypothesis relating to the civilizing of China by the West or at least by Eurasia as it is to assert that no communication existed between the peoples of Yang-Shao and the Island of Minos. It seems more probable, however, that this decoration was born in China, as in the Aegean, by the transition from basket-work to pottery. This also took place in America. The decorative themes are then no longer a caprice of the creative imagination of the artist or a vocabulary of symbols, but more the transition from one technique to another. Some elements which were functional in a basket for example, become decorative in pottery where they have no cause to be practical and where they are only included by habit of hand and mind which the change in material does not abolish, or by a simple play of fantasy which repeats—unconsciously perhaps—the decorations of the basket on the vase.

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[1] *Les Civilisations de l'Orient*, Vol. III, p. 2.

[2] *Op. cit.*, p. 2.

The fact that the motifs used by the Cretan potters of the Kamares period were used again by Chinese potters in Neolithic Honan, with such a striking similarity that doubt can sometimes arise as to the origin of the vase, is one of the innumerable enigmas which modern archaeology offers the historian and the aesthetician. All we can do at present is to note these similarities without attempting to explain them. The Yang-Shao pottery from the actual site of Yang-Shao raises still more questions, equally resistant to definite answer. Here, also, we are drawn into comparisons which raise more problems than they solve. For example, the decorations in the form of cowrie shells, ellipses and butterflies' wings on the vases of Yang-Shao are very reminiscent of similar ceramics which Pumpally found at Anau in Russian Turkestan.

When photographs of Neolithic Chinese pottery and pottery from Tripolje (e.g., those reproduced in Gordon Childe's book *The Dawn of European Civilization*),[1] are seen side by side, it is impossible not to be struck by the extraordinary resemblance: same shape of vase, same decorative motifs. Those ceramics from Tripolje studied by Passek[2] also include models of a sort of hut (those discovered at

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[1] Kegan Paul, London, 1947.

[2] *La Céramique tripolyenne*, in *Izvestii Gos. Akademiya Istarir Materialnoii Cultury*, Moscow–Leningrad, 1935.

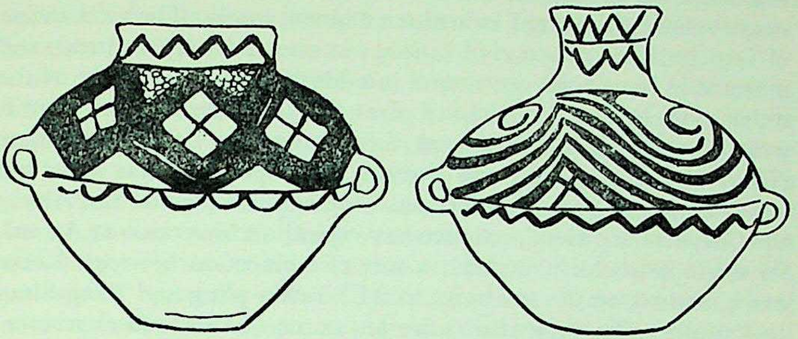

Fig. 1 Prehistoric pottery from Kan-sou

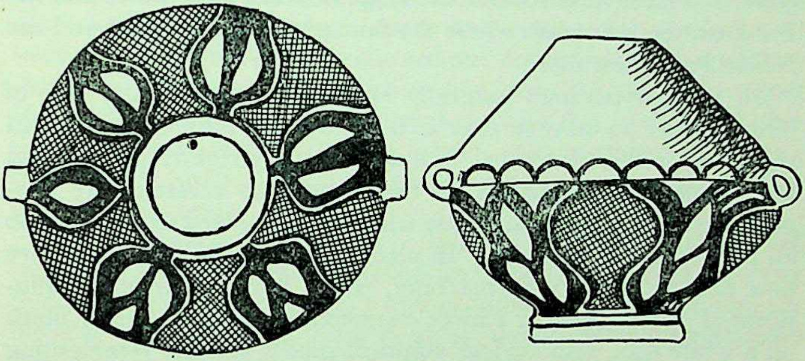

Fig. 2 Vase of the Yang-Shao period

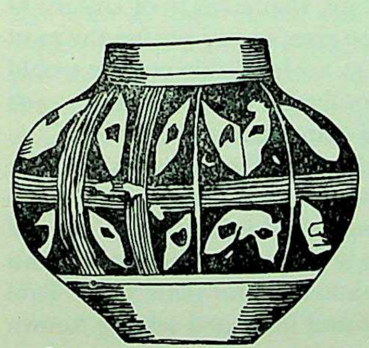

Fig. 3 Painted vase, Tripolje A culture, Ukraine

Popudnia for example), not without some affinity with the small constructions discovered in antique Chinese tombs. The civilization of Tripolje, like Chinese civilization, was essentially agricultural, and it seems to have been quite slow in adding sheep and horses to the much more ancient breeding of pigs and goats. On another score it would be interesting to extend the comparison between Chinese Neolithic ceramics and the pottery of Tripolje to the Oltenian civilization, discovered in the loess of the upper basin of the Alt, in the Carpathians. Here again we have spiral decorations—at Ariusd, for example—which establish a sort of connection between Koros and Cucuteni, on the one hand, and Ch'i-chia-p'ing and Yang-Shao on the other. These analogies are too numerous and too characteristic to be entirely fortuitous.

It must also be remembered how many other features of the pottery from Anau resemble that from Susa and even display many Mesopotamian characteristics. Can we conclude that Anau may have been a centre of stylistic exchange between Asia Minor and the Far East, the crossroads where the Sumerians, the Iranians and the Neolithic Chinese met?

All these hypotheses naturally appear probable in the face of resemblances so strange that it is always doubtful if they could really be purely fortuitous. Grousset has very rightly pointed out how much the decorations on the Yang-Shao ceramics are connected with this Eurasiatic base which is recognized as common to all Eneolithic civilizations. ("In place of the spirals of Kansu we are now dealing either with hatching, which is more directly reminiscent of basket-work, or a more complex decoration in red or black on a white slip, with curious elliptical motifs possibly representing cowrie shells, other ellipses shaped like eyes, ciliated with long rays, or the Pan-Asiatic motif of triangles joined at the top by 'butterfly' wings but in this case often forming a sort of nodule at their junction.")[1] It might be supposed, therefore, that a unity of culture at some period extended over an immense area, incorporating the most varied races, in much the same way as a Megalithic culture would appear to have existed, common to continents far distant from each other and without apparent means of communication.

Painted Neolithic pottery seems to have reached its peak with the art of Yang-Shao. Already, unpainted pottery was appearing which heralded the bronze vases of the Shang period in shape and some of its decoration. The transition from one medium to another in this case appears in relief and ornamentation at the same time. Paul Pelliot has pointed to these analogies and indicated scoring known as "matting texture" in unpainted ceramics and the first bronzes, of which he spoke in his course at the *Institut des Hautes Etudes Chinoises* in 1927.

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[1] *Op. cit.*, p. 4.

Another evolution in ceramics is seen on the site of Ma-ch'ang, where the sober richness of the spirals was replaced by disorderly exuberance, and fantasy took the place of the harmonious grandeur and calm of the volutes of Yang-Shao. We must also mention pottery of the type known as Sin-tien, after the site where it was found in Kansu. An entirely new decoration appears here, best defined by Grousset: "Here, we no longer find anything of the old unwinding spirals or even of the imaginative stripes of other times; nothing either of the patient division into lozenges or ellipses of Yang-Shao. In their place, elegant and severe vases with wide handles, more elongated in shape, bear a few powerful and sober lines: a type of Greek key pattern but more elongated than that of the Dipylon, surrounds the neck; an abandonment of curves and involved design for a straight or broken line, seeking decorative effect by its sole affirmation, apart from a powerful motif such as 'wild sheep's horns', greatly enlarged and curved back, to strengthen the body. Here we would seem to have the last burst of painted Proto-Chinese ceramics. For the period which followed, called after the name of the site, Ssu-wa, in Kansu, Anderssen has only found undecorated vases; it is true that at the same time copper was coming into general use."[1]

Here we cannot enter into the very interesting details of the connection between ceramics from Sin-tien and those from Susa or Dipylon. Anderssen's authoritative work on the archaeological excavations at Kansu[2] gives highly fascinating stylistic comparisons.

Our knowledge of Neolithic pottery was supplemented by the discovery of the "black pottery" culture, which came to light for the first time in 1930 and which has been fairly extensively studied since the finds of 1935. Discovered at Ch'eng-tzu-yai in Shantung, it is characterized by vases made on a wheel, with extreme finesse, and painted with shiny black varnish. The stratification proves that this is the last phase of Neolithic pottery, the last stage of Neolithic civilization. It corresponds moreover to a state of culture which appears superior to the preceding periods, as is confirmed by the remains of fortified towns and the bones of oxen and horses found there. Interesting in itself, this black pottery culture is even more so in that it contains the characteristic elements of the Shang culture which followed it. "This culture", writes Creel, "is the hitherto missing link between earlier Neolithic cultures and Chinese civilization."[1] Liang Ssu-yun, an eminent specialist in Chinese pottery, concludes that there would have been no time-lag between the black pottery and Shang ceramics. The appearance of the black pottery would seem to show that original Chinese art rejected any western influences which may have touched it at an earlier stage. The complete disappearance of painted pottery from the scene, after having attained so high a degree of excellence, is perhaps the farewell to this culture, which was so conscious of all the exotic influences which had assisted it. This complex of Eurasiatic elements, sometimes reminiscent of Susa, sometimes of Sumer, Anau, Tripolje and even Knossos, gives place to an art which is authentically and uniquely Chinese. In its final stage, Neolithic culture already possessed all the characteristics which later developed with Shang, and still later with Chou, and which mark everything that is most specifically Chinese.

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[1] *Op. cit.*, p. 10.
[2] *Op. cit.*, p. 17.

These Neolithic people knew how to weave cloth and also wove mats and baskets. They made bracelets of white marble and jade discs which were worn as ornaments. The form of these ornaments has remained traditional—so much so that it is even found in the Chou period, endowed by antiquity with a sort of official solemnity and religious majesty. For an antiquarian race like the Chinese, the age of an object, custom, or form is already sufficient to give it nobility and beauty. A small marble figurine of an animal has even been found, but this is so exceptional that it gives no clue to the characteristics or frequency of sculpture amongst the Neolithic people.

To compensate for this, we know more of their funeral customs, ever since tombs were found, notably the grotto in Feng-tien, where Anderssen discovered some extremely curious remains of human sacrifice. He collected more than forty skeletons there, both male and female, old people and children—and what makes the idea of normal burial remote, is that all these bones were dismembered, most of them broken so carefully and into such small pieces that it could not possibly have been accidental. It is obvious that these skeletons were intentionally broken into fragments, undoubtedly because they were sacrificial victims. The breaking of bones may perhaps have symbolized a means of preventing the dead returning, an aspect of the general fear of ghosts. The only means of preventing the rage and revenge of the dead who could become vampires and pursue those guilty of their death was to break them up so well that they are rendered harmless. In the same way some negro tribes break the legs of corpses so that they cannot return to their village. In Scandinavian literature, Grettir, the hero of a famous saga, cuts the head off a corpse whose tomb he has stripped, to prevent him following Grettir

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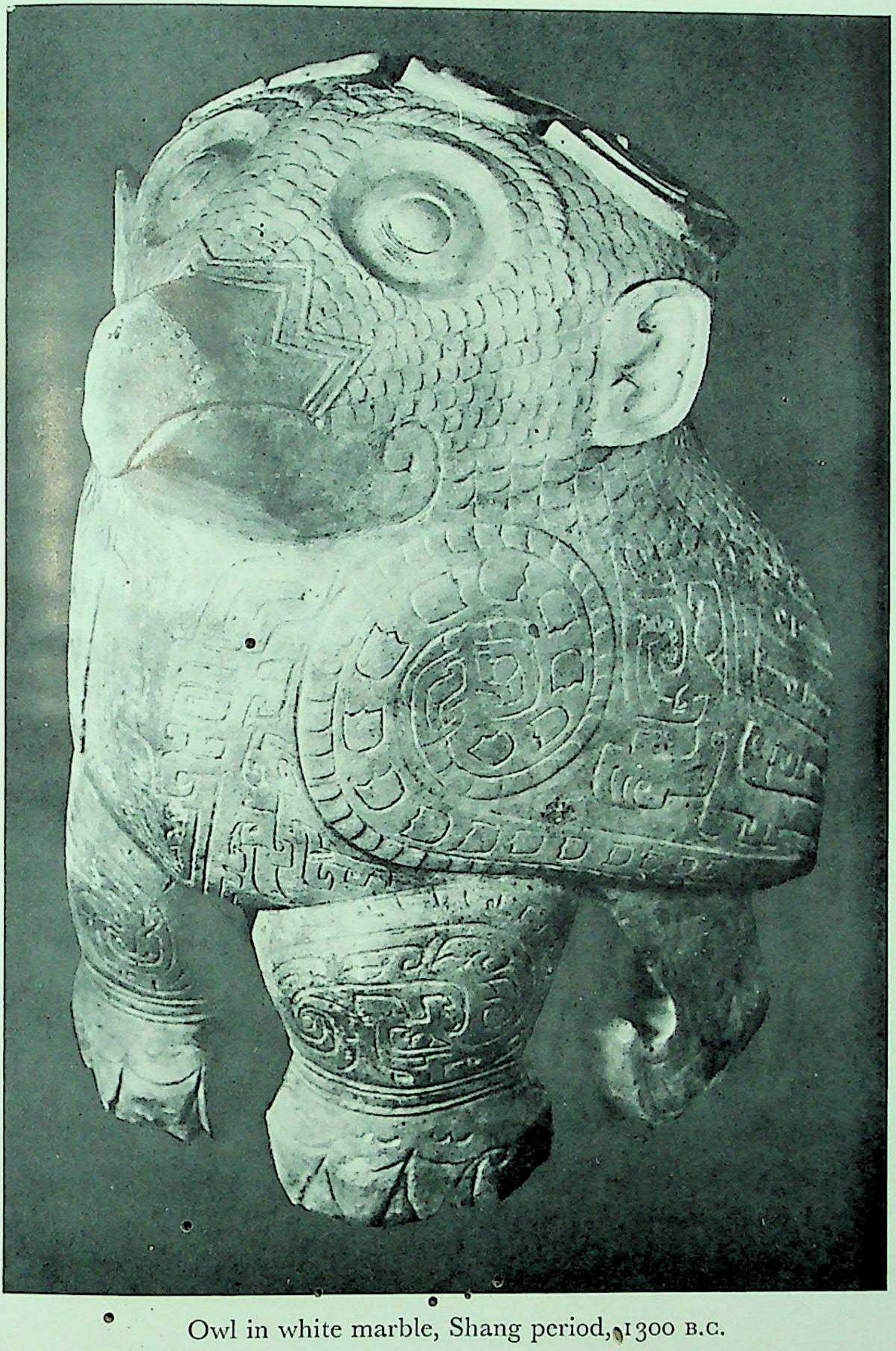
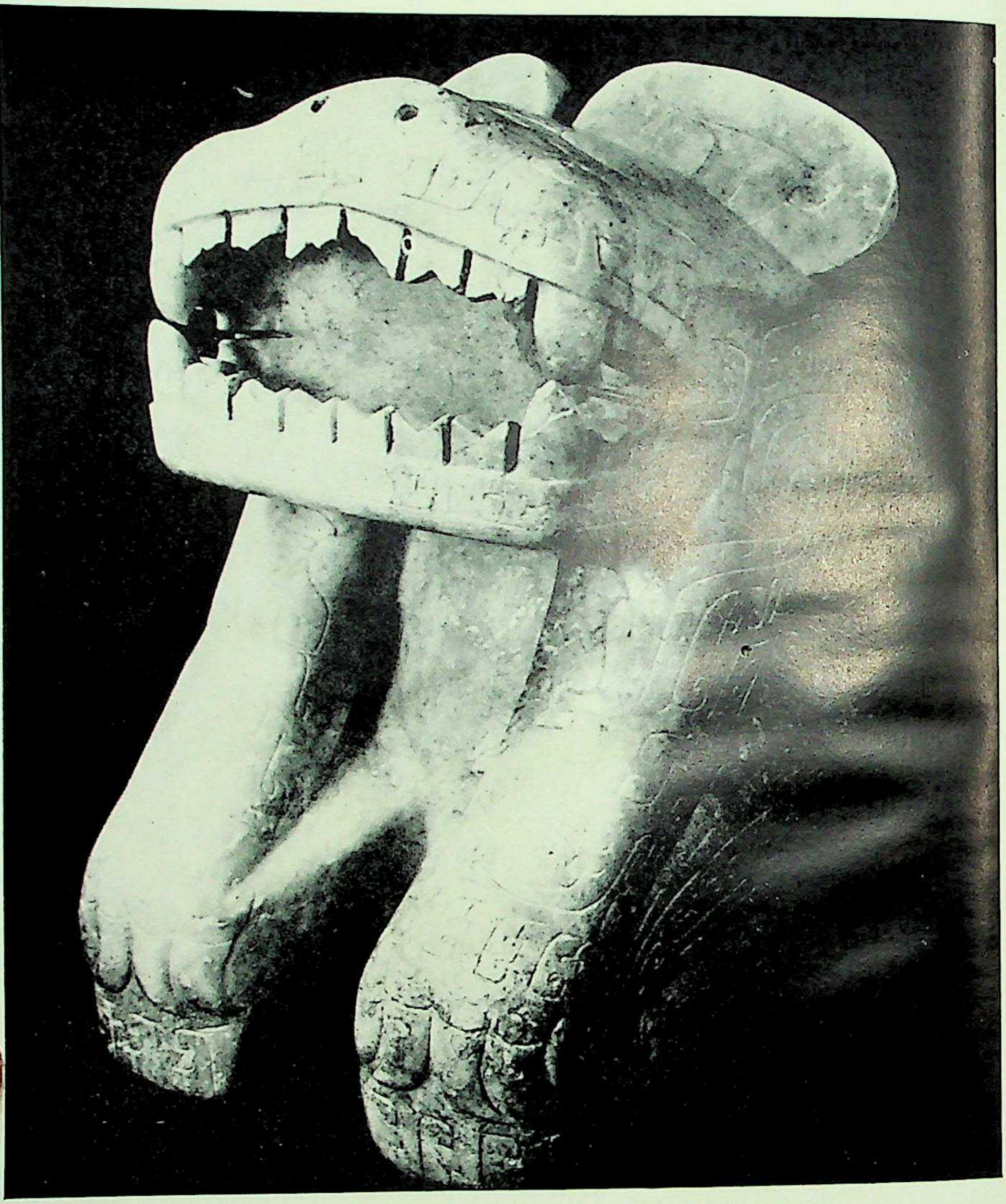
[1] *Op. cit.*, p. 49.



Owl in white marble, Shang period, 1300 B.C.



Fantastic animal in white marble, Shang period, about 1300 B.C.

and seeking revenge. It may be, of course, this breaking up of skeletons was only one more proof that the victims have been well killed so that they could accompany the dead person into the hereafter, in the same way as elsewhere, the objects offered him were also "killed" by making them unusable. They were broken or pierced, always a sign of the absolute consecration of a dead object to the service of the deceased.

After the Neolithic period, divinatory bones are found, analogous to those used by the Shangs. These bones provide valuable information about Shang society (so poorly known hitherto) and illuminate the forms of civilization in proto-historic China.

What connection exists between Chinese Neolithic ceramics and Japanese Neolithic pottery, with which recent discoveries have acquainted us? It is very difficult to answer this question, firstly because of the uncertainty surrounding dates. Even if we may localize Neolithic China in time in a fairly vague fashion (all we know is that it preceded the Shang dynasty and was therefore before 1800 B.C.), an even greater uncertainty surrounds Japan, because in this case the Neolithic age lasted until an extremely late date. As Grousset says: "We must face the fact that prehistoric Japan extended until the general introduction of Buddhism in the sixth century A.D."

Where did the first inhabitants of Japan come from? The theory that they were Ainus has been recently contested, particularly by Ryuzo Torii.[1] On the other hand, the presence of Negrito tribes amongst the Neolithic Japanese (no trace has yet been found of Paleolithic habitats, but this does not mean there were none) is today scientifically proven, but it would be excessive to claim that they occupied the whole country before the arrival of the Indonesians with whom they merged. As far as tools, equipment, way of life and habitation were concerned, these original inhabitants resembled the race called the Paleo-Siberians, comprising Aleutians, Eskimos, Korinles and Chukchi—the group which L. V. Schrenck designates Paleo-Asiatics. The analogies which exist between certain elements of this civilization and the same elements which characterize the Danubian civilization need not be enumerated—the spiral motifs, pottery painted vermilion, female statues in clay, to deduce an obvious connection. It is interesting nevertheless to find considerable megalithic civilization in Japan, characterized by dolmens, menhirs, circles of stones and cairns, such as those found everywhere on the face of the earth and which are still venerated today as religious objects. Moreover, designs in circles and spirals were found in the sepulchral chambers of the tumuli, similar to those in Brittany and

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[1] *Ancient Japan in the Light of Anthropology*, Tokyo, 1937.

Ireland, at Bavrinis and Newgrange. On the other hand, the custom of killing servants to accompany their masters into the hereafter and of burying them in the same tomb, as was done at Sumer, lasted in Japan up to the moment when small clay statues of *haniwa* were substituted for human victims.

There can, therefore, be similarity of culture here, although hundreds and even thousands of years separate its manifestation in different localities. Similarity does not mean simultaneity. Even today, races exist at the Paleolithic stage. There are bushmen who paint exactly as did their ancestors—and ours—for over ten thousand years. The civilization of Japan appeared extremely late, compared with China, because its pre-history extended until the flowering of the Tang. Furthermore, it is also difficult to determine the part played by China in Japanese development because, at the dawn of Japanese culture, Chinese influences appeared infinitely less important than for example Malayan. It was at a comparatively late date that the insular Nippon world drew culturally close to the continent.

It would be very useful to be able to turn to Neolithic art for information on the very complex and much debated subject of the origins of the Japanese race. Based on linguistics, ethnography and aesthetics, various and ingenious hypotheses have been built up. But the question remains, in the present state of knowledge, insoluble. The examination of Neolithic ceramics produces no definite solution. There are traces here of the same influences which mark the Japanese language, but it cannot be definitely stated for example that the seeds of Japanese civilization were sown by Malayan immigrants. Study of the shapes of vases and their decorations suggests the presence of a convergence of mixed insular and continental influences. This is also the conclusion reached by the philologists. "The linguists, however", writes Grousset, "have tried to connect the Japanese with the neighbouring groups. Ramstedt has indicated analogies between ancient Japanese on the one hand, and Korean and the Altaic languages on the other. Matsumoto Nobuhiro, with more success, has pointed to the affinities between Japanese and the Austro-Asiatic languages (Malayan, the Indo-Chinese languages, etc.) and also between Austro-Asiatic folk-lore and Japanese mythology. It is, in fact, quite probable that a Malayan element and a continental element have converged in indeterminable proportions in the formation of the Japanese race."[1]

In studying the various aspects of prehistoric Japanese pottery, it is not so much its resemblance to other types of ceramics which is striking, but its absolute singularity. The ceramics of Yang-Shao give rise to comparisons with Turkestan, Elam, Sumer and Crete, but to encounter Japanese pottery is to be amazed at its difference from other known themes. But it is only possible to date it according to "date sequence", valid in so far as the relative order of succession is concerned, without any direct connection with general chronology —as Sir Flinders Petrie has done for prehistoric Egyptian pottery. We can localize them in space more precisely than in time, because certain types are special to certain regions and are confined to a few provinces.

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[1] *Op. cit.*, p. 7.

"Neolithic or Eneolithic pottery, known as *Jomon Doki*", writes Grousset, "has been found principally in the North. Japanese prehistorians distinguish between the various styles: the Atsude style from the province of Shinano, the Usuda style from the province of Musashi and the Mutsu style from the province of the same name. The decoration consists either of 'knotted cord' designs (Atsude style), or of undulating lines in the form of waves (Usuda style), or by a combination of these two elements (Mutsu style). Themes remarkable in themselves for their force and elegance, but which appear totally distinct from the motifs of Chinese Neolithic or Eneolithic pottery. . . . Another type of Eneolithic pottery, already associated with bronze, Yaoishiki pottery, is much simpler and is particularly represented in the West. According to Professor J. Nakaya, Neolithic culture must have continued in the North for a very long time (up to about the sixth century A.D.) at a period when the South and West had long known of the uses of metal, the bronze age having reached its zenith there in the first two centuries A.D."

It is interesting to read Jinjiro Nakaya's work on this subject.[1] He puts forward certain very curious hypotheses on the character and source of the various types of Japanese Neolithic ceramics. He particularly emphasizes their singularity and the impossibility of fitting them into that framework already known. The type of Euro-Asiatic family to which Neolithic Chinese pottery appears to belong holds no welcome for Japanese prehistoric ceramics, born and developed in an entirely different rhythm.

Vases of the first type, characterized by the design in knotted cord, obviously show the general tendency of prehistoric pottery to reproduce the basket-work containers or esparto supports which originally played the same rôle as the straw surrounding the Italian *fiaschi* today. This decoration does not resemble the scrolls of the Chinese vases. Some allusion to the sea might perhaps be recognized there, as in the Aegean vases, but it is unnecessary to explain this similarity by any (very improbable) relationship to Cretan art. It is sufficient to realize that Japanese culture is essentially marine. An archipelago civilized by seafaring immigrants always gives predominance to themes of the sea, as in the art of the Aegean archipelago and, to a certain extent also, in the Nordic ornamentation of the Viking period.

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[1] *L'Age de Pierre au Japon*, Formes, April, 1930.

Japan, like all insular civilizations, enjoyed much more natural relations with other islands than with the mainland, even though the latter was much nearer than the neighbouring archipelagos. It would seem that insularity attracts insularity, and rejects all bonds with continental art; thus it is possible to speak of an art common to the large family of islands. The non-continental aspect of Japanese civilization therefore remained dominant until the establishment of Buddhism introduced ideas, rites, beliefs and forms into the Nippon archipelago, somewhat foreign to the national spirit. There is no room here to describe the way in which Japan received these foreign elements, assimilated them, digested them, and transformed them into original creations. It is sufficient for our subject—the understanding of Neolithic ceramics—to say that from wherever Japan received her model or the incitement to create, she elaborated them so well that her productions resemble no others. The importance of maritime themes is new proof of this.

"Situated opposite the amorphous and compact continent", writes Grousset, "she is a piece of Asia, but a completely differentiated piece. The dominant influence of the sea has given birth to quite peculiar historic conditions. . . . In the mirror of her inland sea, she reflected the civilizations which faced her; first of all, ancient China with her refined culture, then, silhouetted behind her, Mongol Altai and its warlike force, the Indian Archipelago and its adventurous thalassocracy, Buddhist India and its dream of moral beauty, its sweetness and mystery. Nippon civilization was the synthesis of all these civilizations; but it was an original synthesis. Near enough to the continent to receive its influences, Japan was prevented by her insularity from a too thorough penetration."

The second type of Neolithic pottery revives marine themes and accentuates still further the allusion to the sea by playing skilfully with waves curling ingeniously and realistically—like those which have always been one of the favourite themes of Japanese painting. In the third, and final type, this wave, stylized in scrolls, becomes a purely decorative ornament.

In addition to the vases, excavations on Neolithic sites in Japan have brought to light extraordinary statuettes which excited the curiosity and ingenuity of archaeologists to an enormous extent. These are strange and very enigmatic figurines, of a character unknown elsewhere in the history of art. They have no parallel in Chinese art, where modelling in clay does not appear to have been

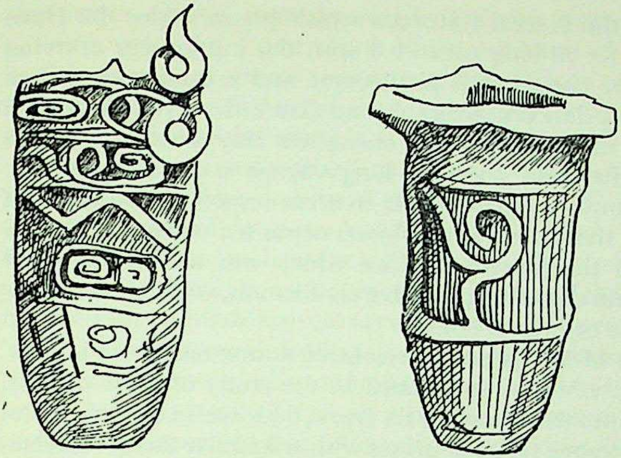

Fig. 4 Jomon shiki vases with corded design, prehistoric Japanese

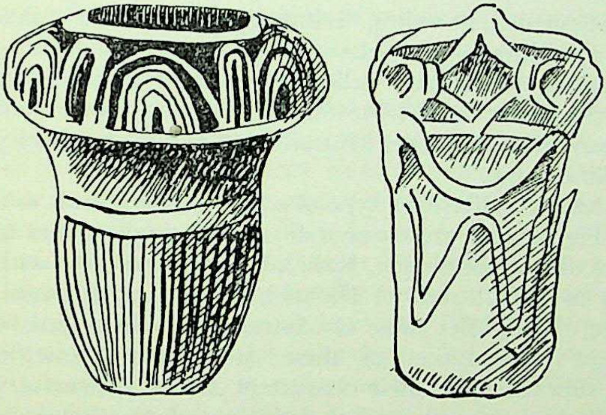

Fig. 5 Jomon shiki vases with scrolls and with a knotted cord design, prehistoric Japanese

practised during the Neolithic period or under the first historic dynasties. It seems to have been a fairly late product and only had a considerable vogue under the Hans. In China, contrary to what happened elsewhere, sculpture in stone and bronze preceded modelling in clay. Or at least, the present state of research has not produced any corresponding objects on Neolithic sites, although these have been found to be extremely rich in vases of a refined execution. It can therefore be presumed that small clay models did not appear in China until the time when human sacrifice ceased, because they have not been found at an earlier period.

Excavations have brought proof that sacrifices of men and animals at funerals continued up to the Chou Dynasty. The appearance of the funeral statuettes which began under the Hans and continued for so long coincided with the suppression of living sacrifice. It gave rise to such picturesque and exquisite inventions as the musicians, dancers, actors, Mongolian ostlers, Jewish pedlars and all those small painted or varnished clay statuettes which accompanied the dead on their long voyage into the hereafter. Here is an example of an aesthetic creation responding to a rite of substitution, in the same way as objects deposited under foundation stones replaced the human sacrifice which was associated in all races, at a certain degree of primitive civilization, with the construction of a temple or even a house.

The purpose of the Japanese Neolithic statuettes is not known. Jinjiro Nakaya, who has specialized in the study of these objects, classifies them into the following six types: figurines in realistic style; figurines in grotesque style; figurines with triangular faces; figurines with owl-like faces; figurines Mutsushiki A; and figurines Mutsushiki B.

"Each type of figurine", he writes, "is intimately connected with a type of pottery. Figurines in grotesque style are found with Atsudeshiki pottery and are sometimes called figurines of Atsudeshiki. Figurines with triangular or owl-like faces are always found with Usudeshiki pottery, while figurines Mutsushiki A and B accompany pottery of the same name."[1]

Each type of statuette, like each type of pottery, corresponds to a definite region. Figurines in grotesque style are principally found in the mountainous districts of Sinano, Kahi and Iwashiro; those with triangular faces in the districts of Hidachi, Shimofusa, Musashi, Kanto and along the Pacific; those of Mutsushiki in the region of Tokohu. Nakaya's description of these astonishing statuettes emphasizes the differences in their characters. But it is necessary to study the objects themselves to feel their powerful and strange attraction and to attest the evolution of this art, which is obviously attached to funeral cults and fertility rites, which are furthermore always associated with ideas of generation, resurrection, fertility and renaissance.

The most simple are those figures which Nakaya designates "realist". "They have", he says, "neither a very characteristic model nor design. The eyes, eyebrows, nose and mouth of these little dolls are realistically executed. There is generally no design, on their body, as if to depict a bare figure. They can be considered the original type, but this conception must still be examined."[2] The figurines of Atsudeshiki, or those in grotesque style, still resemble the earlier group in that they are scarcely decorated and also seem as if they were inspired by a desire to represent the real, however clumsily. Later works show evidence of a much freer imagination and richer ornamentation. Those statuettes from Usudeshiki, with a "triangular face" and with an "owl-like" face are sufficiently clearly described in these terms.

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[1] Documents, Paris, 1930. No. 1, p. 25.

[2] *Op. cit.* p. 23.

"The figurines with triangular faces", writes Nakaya,[1] "have realistic bodies. The features of the face form a 'T' with the line of the eyebrows and the nose; small eyes are added. The line of the eyebrows forms a quarter-moon with the chin. . . . It is claimed that these Neolithic figurines represent the god of childbirth because their breasts and abdomen are very large, as with a pregnant woman." The body is covered with stippling, which probably represents clothing or tattooing. The arms are as unrealistically shaped as the head, ending in a sort of scrolled stump. The stomach and breasts are strangely protuberant and the sex is deeply marked. There is a turn towards allusive stylizations, the religious or magical significance of which is still uncertain, but which gives these figurines a striking character, as an image born of a dream or a vision.

The statuettes with owl-like faces are stranger still, with their hallucinating vitality. They are related in some ways to the Phoenician idols or to the first sculptures of the Cyclades. Here, in fact, we reach an aesthetic plane where creative fantasy and desire for stylization move away from all realistic intent. Abstract geometry, a fantastic vision rather than observation of the real, inspires these small personages. Their faces are outlined with a heart-shaped line and really do bear some resemblance to the bird dear to Athena. The figurines were discovered in the same regions as those with triangular faces and seem very likely to be modifications, or developed visions of this latter type. They turn away from imitative representation and, by reducing the features of the human face to the face of an owl, attain a strange and fantastic vehemence.

The statuettes from Mutsushiki A and B are even more fantastic. These women with bandy legs, cylindrical trunks, and short arms, bent outwards, evoke a magic divinity of intense vitality with brief and powerful abstraction. Like some African and Polynesian idols, they have the power to convey the grandiose and monstrous character of the sacred element, which the stylization accentuates and emphasizes. These strongly carnal, stunted and heavy images are of so great an interest that we suggest the reader refer to photographs in the volume referred to. Better than any description, the examination of the figures demonstrates the importance of Japanese Eneolithic modelling to the beginnings of art in the Nippon Archipelago.

"The figurines from Mutsushiki A and B", writes Nakaya,[2] "are very delicately made and they are brilliant. They can be divided into two groups: those with solid and those with hollow bodies. Figurines of the latter type are larger and more skilfully made; the four limbs are attached at right angles to the joints. The whole body is generally covered with a special design called the *Mutsushiki design*. This type is only found in the locality of Tokohu. . . . Figurines in Mutsushiki A style wear a sort of crown decoration on their heads. Their eyes are very large and sometimes occupy the whole face. Some sources think that these gigantic eyes represent snow glasses like the Eskimos wear. They have therefore been termed 'figurines with spectacles'; specimens of this type have been found among Peruvian figurines, etc. I myself think that they rather represent an exaggeration of the eyes of the savage. The design on the body is in spirals; a Mutsushiki design proper. The design of Neolithic pottery in Japan tended gradually to turn towards symmetry in the final period: first came design in spirals, then design in motifs, until it finally reached a symmetrical design. Symmetrical designs are scarcely ever found on the pottery of the last period because, somewhat before the appearance of this type, design was no longer used on the vase. But the figurines of Mutsushiki always have a design of this type. This is attributed to the fact that the figurines are symmetrical in shape and have a straight line on the front of their trunks. . . . Figurines in style Mutsushiki B differ little in shape from the earlier style, but they do not have the large spectacle-like eyes or the crown on their heads. The whole body is not covered by the design, only parts of the shoulders, loins and pelvis. And these designs are of a special type known as 'Mutsushiki straight line designs'. There is a V-shaped line on the chest analogous to the collar of a kimono."

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[1] *Op. cit.*, p. 38.

[2] *Op. cit.* p. 32.

The most modest incidents often give rise to the most wondrous discoveries. Thus, it may be that we owe all our knowledge of Shang civilization to that honest peasant who found fragments of engraved "dragons' bones" while tilling his field. The curiosity aroused by this discovery encouraged the seekers; excavations were made and hundreds and thousands of these bones brought to light. And, this time, instead of taking them to the apothecary, they were sold to the antiquarians and archaeologists who paid well for them. So well, that, as always happens in China, the people were not content only to exhume "dragons' bones". They manufactured them. And, the ingenuity of Chinese forgers being unequalled anywhere else, it was necessary to take precautions against this abundance. Henceforth it was suspect, just as their rarity had previously been deplored.

This happened at Siao T'uen, a place hitherto unknown and which suddenly moved to the forefront of archaeological news; a

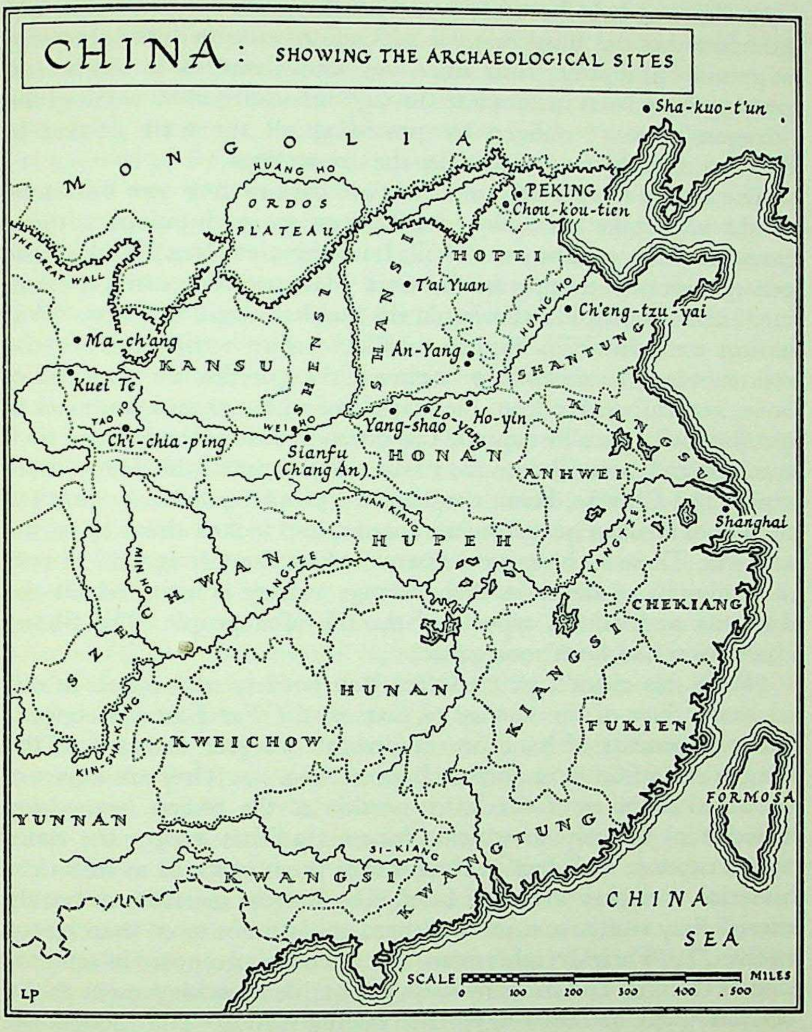
CHINA: SHOWING THE ARCHAEOLOGICAL SITES
Sha-kuo-t'un
MONGOLIA
HUANG HO
ORDOS PLATEAU
THE GREAT WALL
PEKING
Chou-k'ou-tien
HOPEI
SHANSI
T'ai Yuan
HUANG HO
Ch'eng-tzu-yai
SHANTUNG
Ma-ch'ang
KANSU
SHENSI
An-Yang
Kuei Te
TAO HO
WEI HO
Lo Yang
Ho-yin
Yang-shao
KIANGSU
Ch'i-chia-p'ing
Sianfu (Ch'ang An)
HONAN
ANHWEI
HAN KIANG
Shanghai
HUPEH
YANGTZE
MIN HO
SZECHWAN
CHEKIANG
KIANGSI
HUNAN
FUKIEN
KIN-SHA-KIANG
KWEICHOW
FORMOSA
YUNNAN
KWANGTUNG
SI-KIANG
KWANGSI
CHINA SEA
SCALE
MILES
0
100
200
300
400
500
LP

Fig. 6 *Map of Chinese archaeological sites*

site hereafter as illustrious and venerable as Tell el Amarna, Ur, Ras-Shamra, Susa or Knossos. This site is called Ngan-yang. All of a sudden, it became the scene of the most impassioned and fertile research, because the treasure, which began by being only "dragons' bones", put the excavators on the track of the royal tombs of the Shangs, and a whole unknown civilization. Until that time it had been known solely from a single mention in the ancient annals, and even this was held by some sources to be mythical. Evidence had been found of the most complete and refined culture in the obscurity of remote antiquity. And since our knowledge of it might still perhaps have been incomplete through ignorance of its writing, the "dragons' bones" obliged by providing all the texts needed to illustrate the objects revealed by the excavations.

The men of the period, not wishing to trust in their own initiative, would undertake no action, be it even to go hunting, without consulting the soothsayer. "Will I return victorious?" asked the general before departing for the wars. "Has someone cast a spell on me?" asks an invalid believing in the magical origin of illness. "Will it rain tomorrow?" a hunter wonders before setting out for the countryside. The soothsayer engraved the question on a morsel of bone, generally taken from the scapula of an ox, or on a fragment of tortoise shell. Then he exposed this question to fire; the bone or shell crackled and, according to the nature of the crackle, he deduced the reply. The Chinese, being conservative people, preciously guarded the bones bearing question and answer, and locked them up in the archives. These archives were discovered by chance, and the dozens of thousands of bones in their strange variety constituted all the domestic and official aspects of the life of a people. The Shang civilization had been resurrected.

"With this event", writes Creel, "an entirely new epoch in our understanding of the history of man in the Far East was begun. These fragments of bone are at present our sole remnant of the written records of most ancient Eastern Asia. . . . They are a part of the royal archives of the latter portion of the Shang (sometimes called Yin) dynasty to which Chinese tradition assigns the dates 1765-1123 B.C. This fact in itself makes them precious as historical material. Yet they are very brief. The longest inscriptions barely exceed sixty words, and most of them contain not more than ten or twelve . . . (Their decipherment) has been an adventure in scholarship as thrilling and in many ways as notable an achievement as the decipherment of the Egyptian Hieroglyphics. The occasional foreigner took part here, but the greatest part of the work was done by Chinese scholars who only spoke their own language and had no western background."[1]

Methodical excavations were undertaken on the site of Ngan-yang from 1928, at the initiative of Professor Li Tsi and Carl Whiting Bishop. As soon as work began, the prodigious interest of the remains became apparent and, after an inevitable interruption because of political events, the scholars again extended the field of research. There followed an uninterrupted succession of sensational discoveries.

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[1] Creel, *op. cit.*, pp. 22–25.

Marble statues, evidence of the most refined technique and aesthetics (when only thirty years before, the scholars were gravely affirming that there had been no sculpture in China before the Hans); bronze vases, as perfect as those of the Chou Dynasty; monumental tombs containing treasures, and innumerable smaller tombs, scarcely less interesting. By 1935, the balance sheet of these discoveries could be totted up; it included over 300 important tombs, more than 1,100 skeletons; the plan and the principal buildings of the Shang capital; innumerable objects of all types, arms, tools, ornaments, vases, helmets, ceramics and bronzes, even paintings; finally, the bones on which the daily life of the citizens as well as political events of the State were engraved. This was the result of four or five campaigns; already Ngan-yang figured in capital letters on the archaeological map of the world.

Chinese annals relate that about the year 1400 B.C., King Pang Keng established his capital on the banks of the River Huang and constructed a splendid town at the place called Ngan-yang which remained celebrated in the memory of men by the name of the Great City of Shang. Where could the archaeologists have looked for it? It needed chance to resurrect the Great City of Shang and awaken it from its sleep of over three thousand years. And now the resurrection is accomplished. The ruins of Ngan-yang provide as much information of the men who lived in the Great City as the tells of Mesopotamia of the men of Sumer and Akkad.

The site of Ngan-yang was so favourable, both economically and strategically, that men had already made their dwellings there well before the arrival of the Shangs. Those of the *painted Neolithic pottery* came first, settling on a promontory projecting in a sweep of the River Huang. Then, after the place had been abandoned for some time, the men of the *black pottery* arrived and hollowed out their habitations in the soil. These were strange dwellings, obviously fairly primitive, but none the less habitable. "They were", writes Creel, "bee-hive-shaped pits, dug in the ground, some ten feet in diameter and about the height of a man or considerably deeper. They were roofed over with timbers and these were covered with sod or thatch. Entrance was through a door at the top. Such houses were fairly practicable, especially owing to the peculiar tendency of loess soil to stand in vertical walls without falling."[1]

The men of the Shang dynasty, who followed the Neolithic men on this site, preserved these ancestral dwellings and made them into store-pits or treasure-caves. They did not, in fact, inhabit troglodyte dwellings themselves, but built comfortable houses, raised on terraces of tamped earth, with columns supporting roofs of beams.

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[1] Creel, *op. cit.*, p. 60.

The ideogram which signifies "house" is an exact picture of a Shang dwelling. Not only did they appreciate comfort but they also decorated their habitations with paintings in bright colours, sculptured wood and pieces of sculptured stone. The ruins of the palaces are as vast as those of any modern palace could be. One of them occupies a field of excavations of six hectares.

But the Great City of Shang did not consist of palaces alone; remains of artisans' houses have also been found, still containing tools and instruments. There is the district of the bronze founders, the stone cutters, the jewellers and the arms manufacturers. It was an important town and to protect it from the envy of neighbours, it was surrounded with imposing fortifications which enabled it to withstand a siege and repel all attack.

When the remains of the houses of the living are cleared from a field of excavation, nothing but debris and waste usually remain; broken ceramics and unsuccessful bronze vases. When the famous site of the kilns where the admirable Sung ceramics were manufactured was discovered at Shang-lin-hu, in Che-kiang, houses built almost entirely with these wasted pieces were found, these misfires of the magnificent Yueh pottery, the pride and joy of collectors. Fortunately, the general custom of burying the dead with funeral furnishings has preserved pieces intact.

The tombs at Ngan-yang, as we have already mentioned, were often of monumental dimensions. The four royal tombs, in particular, were very vast and constructed with marvellous care. Very striking photographs of these sepulchres accompany a study by Timperley on *The Awakening of China in Archaeology*.[1] These particularly demonstrate the typical arrangement in the shape of a cross, the vault resembling an upturned pyramid, resting on its point and reached by wide stairways. The grandeur of this monument and the immense work entailed in its construction can be gathered from a description by Creel of a tomb discovered in 1934 at Hu Kang, near Ngan-yang.

"The central cavity digged for it was twenty-two feet square and more than thirty feet deep. On the south, starting from a point sixty-five feet from the tomb, is a causeway seven feet wide, sloping to the bottom, down which the corpse and other articles could be conveyed. On the north, starting from about thirty feet away, a flight of steps six feet wide leads down to the tomb. Altogether it occupies, from north to south, a distance of nearly one hundred and twenty feet. A chariot and many other articles were probably buried here; it was quite evidently the tomb of some very important personage, perhaps a king. The whole of the central cavity, twenty-

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[1] *The Illustrated London News*, London, April 4th, 1936.

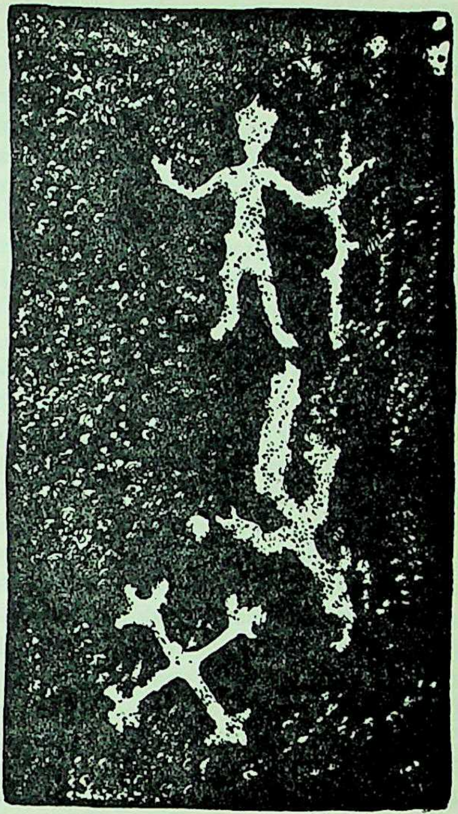

Fig. 7 Shang pictogram

two feet square and thirty feet deep, was filled in with pounded earth, like that of the house foundations. To pound this earth was a tremendous labour. It was intended to protect the dead; actually it betrayed the location of the tomb, which was robbed, in all probability within a few centuries after it was made. The robbers were very thorough; they dug a huge pit, leaving untouched only a crust of about two feet in width, around the edge. In this two-foot crust of pounded earth the excavators found more than thirty human skulls, placed in the earth and crushed as it was pounded. There is nothing more of the skeletons, only the skulls. The excavators consider that, including those which must originally have been in the centre, the heads of not less than a hundred human beings were buried here. And there is good evidence that these were the heads of human victims specially sacrificed at the funeral, rather than merely heads taken in war and hoarded for this purpose. For some of the cervical vertebrae are still associated with them;

these would have dropped off, due to decomposition, if the victims had not been very recently killed."[1]

Creel also describes the enormous task of constructing the tomb, comparable to that of the ancient Sumerians. "The Shangs", he says,[2] "did not bury their kings with such lavish expenditure of labour as the Egyptians put into their pyramids. At the same time, the construction of one of their royal tombs was no mean task. The beginning was the digging of a pit, in the case of the largest tomb forty-three feet deep and sixty-five feet square—large enough to contain a good-sized four-storey building. Two of the five large tombs known were in the shape of a cross, rather than square. In the middle of each of the four sides a broad sloping stairway was constructed. The excavators have done their work carefully and one can still see the places in the earthen treads which were worn down by the feet of the labourers who built the tombs and carried their furniture down them, more than three thousand years ago. At the bottom of this pit a wooden tomb chamber was constructed, about ten feet high and a little smaller than the bottom of the pit itself. The walls of this chamber were decorated, in places with almost incredibly fine carving, in others with polychrome painted designs. Then the funeral was held, the body and other objects were put in place, and the whole excavation, every inch of the way to the surface, was filled with pounded earth. This last process alone must have required the labour of a small army of men for a long period."

Human sacrifices were then celebrated. Their remains have been found in the earth of the tomb. The wives of the dead men were undoubtedly sacrificed so that they could follow their husbands into the other world. This is proved by skeletons decorated with jewels and diadems encrusted with turquoises, which must be those of ladies of high rank. Slaves were also killed, by the hundred sometimes. Their heads were detached and placed apart, and all their bones broken into minute pieces. It is unlikely that these victims sacrificed their lives voluntarily; most of the corpses thus found had their hands tied behind their backs obviously to prevent them struggling, despite the traditional indifference of the Chinese to death. These funeral sacrifices, which we have already seen practised in the Neolithic period, continued during the reign of the Shang dynasty and lasted until the Chou, until the time when a sentiment of humanity or economy replaced living victims by earth effigies. In the same way, models of houses and furniture, and ingots of gilt paper, are solemnly burned at Chinese burials today, to replace the effective destruction of everything belonging to the dead person.

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[1] Creel, *op. cit.* pp. 210–211.

[2] Creel, *op. cit.*, p. 177.

This custom, which goes back to the most remote antiquity, and which was general throughout the world, is open to different interpretations. Some sources say that the dead need the same objects in the other world as they used in life on earth. In our opinion, the custom of placing food in the tomb was to prevent the dead person tasting the food of the shades. This they invariably offered him and if accepted, obliged him to live among them. Thus, in the myth of Persephone, the infernal food is the obstacle to her return to earth, to her resurrection. In order to be reborn, to be resurrected, this food must not be touched. Food left at the disposal of the deceased will therefore help him resist temptation, if he feels hunger or curiosity about the food offered him. The use of funeral furnishings probably originated in the belief that the dead person would not like the living to use the objects he left behind; they were therefore placed in his tomb with him. They were killed by breaking and piercing to show quite clearly that they had been deliberately made unfit for use by the living. Then, as fear of phantoms (for it was thought that the dead would return to claim their own if it were not given to them) became less, only a portion of their possessions was buried. Later still, only images were left, by virtue of the argument that a shadow of a man only needed shadows of objects.

But, in ancient China, the dead possessed formidable powers and would undoubtedly not permit themselves to be duped as easily as present-day corpses who are content with money made of paper—not even paper money. At the time of the Shang dynasty, the phantoms were more demanding. They were also dreaded and every means was used to appease them. The Chinese have magnificent ghost-stories. Perhaps these go back to the Shang dynasty—which sacrificed hundreds of victims to its dead and meticulously broke up their skeletons. The fear these ghosts inspired reappears in very strange ways—even in the characters which designated the dead in inscriptions of the epoch. Shang pictograms formed the origin of Chinese writing. The characters have not been significantly modified in the course of centuries; they have become scarcely more abstract than in the second millennium B.C. The letters were really small pictures, exactly like Egyptian hieroglyphics or the mysterious writing of Mohenjo-daro. The character, therefore, signifying the spirit of the dead represents a man with an enormous, rather square head, holding a cross. If the phantoms appeared in this form to their descendants, one can well understand how they might be afraid of upsetting such ghastly visitors. Furthermore, these ghosts were not content merely to frighten; they undoubtedly also had power to hurt. Another character which in a curious way signifies both fear and respect—as if respect necessarily resulted from fear—consists of a picture of the ghost armed with a sort of harpoon.

Excavations of the Shang tombs provided the most complete documentation of the society of the time. The funeral furnishings and the collection of divinatory bones show how the people lived, the type of agriculture they practised, the cereals they cultivated, the animals they bred for food or for work in the fields. A character which sometimes appears in the writing on the divinatory bones shows an elephant led by the hand of a man—which proves that these animals were broken in, as today in India, and employed for rough work.

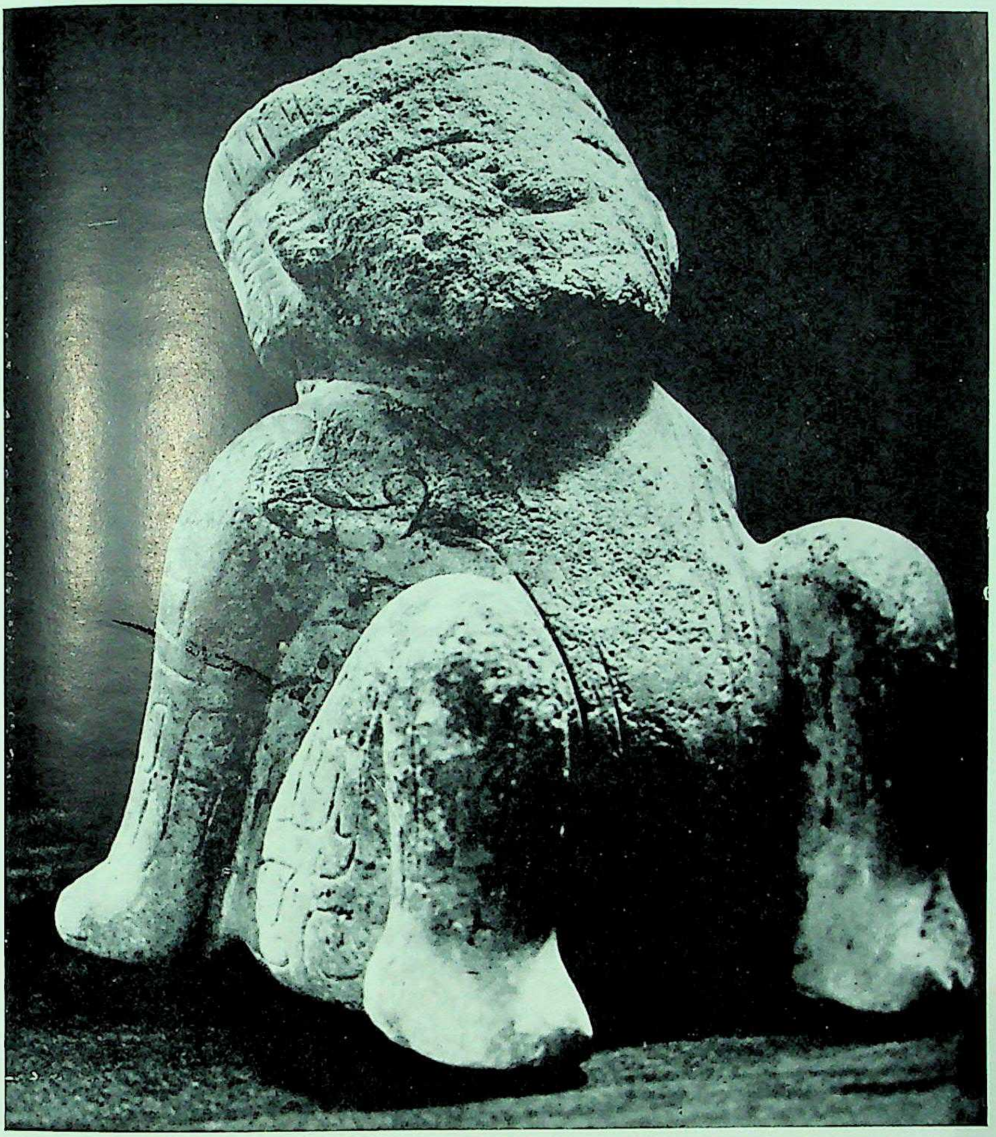
But we are principally interested in the artistic creations of the period and, in this respect, burial places have supplied considerable material. The tombs, as we have already mentioned, were decorated with paintings. Unfortunately, these have been badly preserved and only fragments remain. But even these are sufficient to show that they were done with a sort of lacquer, producing very brilliant and very striking colours. The themes of these compositions are again the motifs figured on the bronze vases, i.e., fantastic or stylized animals, such as those examined below.

The pottery is clearly distinguishable from the Neolithic ceramics already described. The most beautiful is the white pottery found in the royal tombs. This probably originated from T'zu Chou, that paradise of porcelain, which gave birth to the masterpieces of the Sung period, and whose tradition of aesthetics and craftsmanship has continued up to the present day.

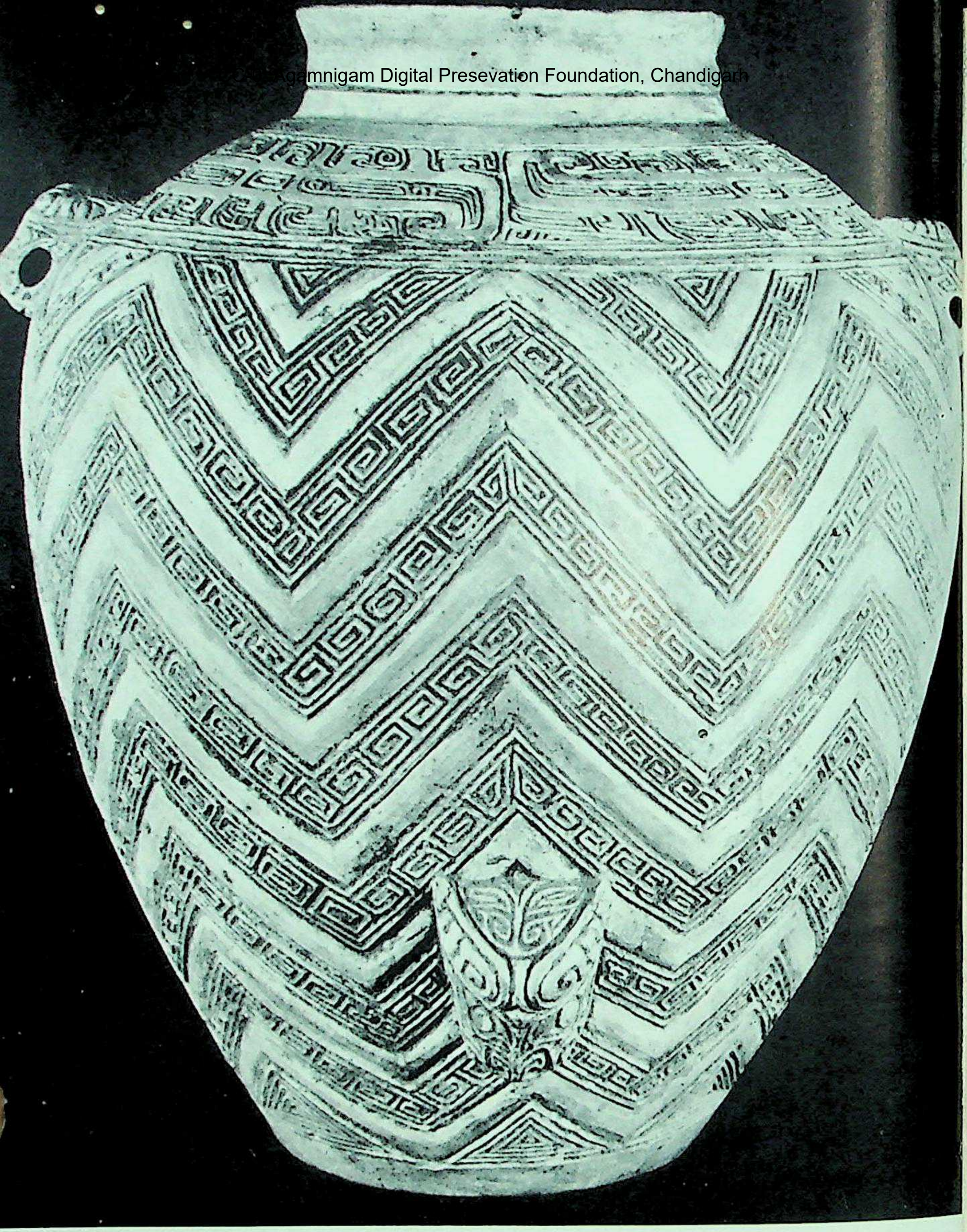
"The ordinary clay used for most of the pottery gave vessels of either grey or red colour, depending upon the baking. If the clay was oxidized thoroughly, it became red; if not, it remained grey. Some of the broken edges of red pieces show that the clay was red at the outside, where oxidization was complete, but still grey in the middle. The clay used for ordinary pots was of varying qualities of smoothness. Some vessels designed to be used for cooking had a great deal of sand mixed with their clay, intended, it is said, to aid in the conduction of heat from the outside of the vessel to the contents.

"Much of the pottery was made by hand, without the use of the potter's wheel. No doubt the 'coiling' process was used, the vessel being smoothed off afterwards either with the hand or by scraping with tools. In many cases, however, the potter's wheel was certainly used, and with no little skill.

"The designs on the white pottery were carved in the wet clay. They often bear great resemblance to the designs found on bronzes. It is thought that vessels made of this white pottery were used, like bronzes, for ceremonial purposes. This is borne out by the fact that



Squatting personage, marble originating from Ngan-yang



Vase from Ngan-yang, Shang period

very fine specimens were buried in the great royal tombs. Designs on the other pottery were either impressed or incised in the wet clay. These patterns show a great deal of variety. Many of the patterns are made by pressing string or cord into the clay. One common pattern, consisting of small diamond-shaped impressions, is a good deal of a mystery. It could hardly have been made in any way save by stamping or printing, but if it was made in this way there should be joints where one impression leaves off and the other begins; so far no such joints have been found."[1]

In 1929 the discovery of a fragment of statuette in the Shang remains at Ngan-yang, destroyed the legend that the Chinese knew nothing of sculpture until the coming of the Hans. This statuette, which represents a man squatting, is most singular, but said nothing very explicit about Shang plastic art. Until the discovery of the royal tombs in 1934 and 1935, only conjecture was possible. Today, the fact can no longer be ignored that the Chinese of the Shang period attained a degree of excellence in this art which they have never surpassed and rarely equalled. The *Illustrated London News* of April 4, 1936, contains photographs of these sculptures which show, more than any description, the fantastic power, the grave and angry grandeur, the expressive vigour and the rich imagination which characterize the art of the period. It is rightly supposed that the Shang models at Ngan-yang must have been preceded by more tentative and experimental attempts. Here we are in the presence of an art in complete mastery of its technical means and its aesthetic. It would have been impossible for the Chinese to have reached such heights of excellence at one fell swoop and it can therefore be legitimately assumed that less perfect sculptures must have existed well before that period. Excavations in China, as we have already said, have only begun. Undoubtedly we will one day find the missing links, the "primitive" exponents of an art, of which the Shangs already represent the "classic" or even the "baroque" stage.

Cut in limestone, which resembles marble or alabaster, the Shang statues are impressive for their dramatic vehemence, their deep comprehension of monstrous form, characteristic of Chinese art, and for that native instinct for subtle allegory, which conceals behind the monsters the forces of nature, sentiments or ideas. Notable amongst them is a bizarre figure resembling a man or monkey kneeling, in the same posture as the character for man in the pictograms. But this strange being possesses the head of a tiger, its mouth wide open, revealing terrible fangs, while the claws of a feline are joined to a human hand. Symbols analogous to those on

[1] Creel, *op. cit.*, pp. 103–4.

the vases, cover this mysterious effigy. The compact, concentrated violence of this figure, charged with the vital energy of a beast ready to spring, has an overwhelming effect on all who see it.

The same richness of invention in the creation of a composite animal also appears in a bizarre picture of an indefinable monster with the general silhouette of a screech owl but which makes a very different impression from that normally given by that peaceful nocturnal bird. Again, it is monstrous in its general effect, but its elements taken separately are natural and realistic. Here again, we have the squat body, the impression of immense force in repose ready to be unleashed suddenly. All this contains in advance the essential character of Chinese art in all its great periods. At the dawn of this civilization, we already see the potential creations of future centuries. Chinese plastic art shows that already at this period, China had found herself and realized the deepest of her aesthetic needs.

In this respect, the excavations at Ngan-yang have the value of a veritable revolution in the history of Chinese art. Hitherto, serious and well-informed authors, such as E. H. Minns, could write that the dragon, tiger and phoenix only appeared under the Han dynasty.[1] Today we know that these animals were the subject of sculptures in relief over fifteen centuries earlier, and frequently decorated bronze vases. Specialists in Scythian art, such as Borovka and Rostovtzev, could also affirm that Scythian art had influenced Chinese art, particularly in its animal aspects, and that the zoomorphic themes came from the steppes. Today the presence of these themes has been established in the Shang excavations at a period so remote that no manifestation of Scythian art or the art of the steppes could possibly have penetrated.

The Chinese of this period did not reserve the use of bronze for religious and aesthetic uses. They understood the practical advantages of this material and made from it all sorts of arms and tools, axes, knives and needles, as well as daggers, spears and arrowheads. They smelted helmets, which were uncovered in large quantities by the 1934 excavations. A single tomb contained seventy and the total discovered in the Ngan-yang region, either during official research or by clandestine excavators, reached several hundred. Bronze was also used in the manufacture of pieces of armour and ornaments for chariots, the latter particularly being of prodigious interest.

A strange circumstance has enabled us to possess a large number of chariot ornaments. This was the sacrifice of chariots. The chariot, at this period when equitation was still unknown (the nomads from

[1] *Scythians and Greeks*, Cambridge University Press, 1913.

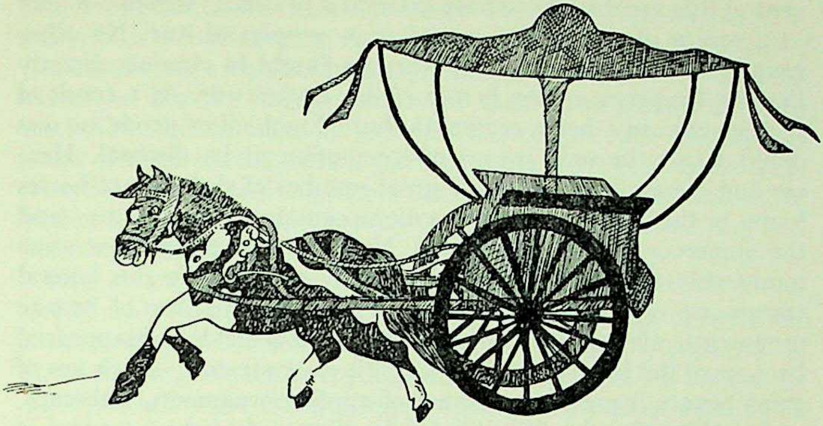


Fig. 8 Chariot of the Hsia dynasty, second millennium B.C.

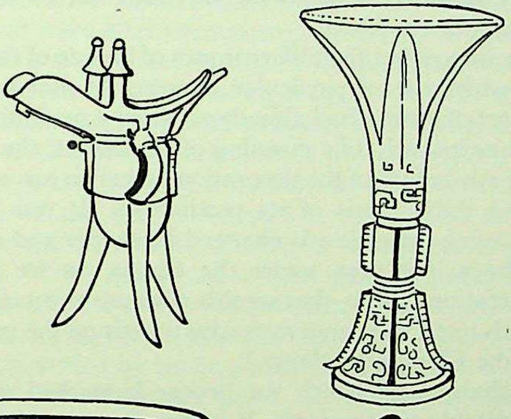


Fig. 9 Li and Ting vases, Shang period

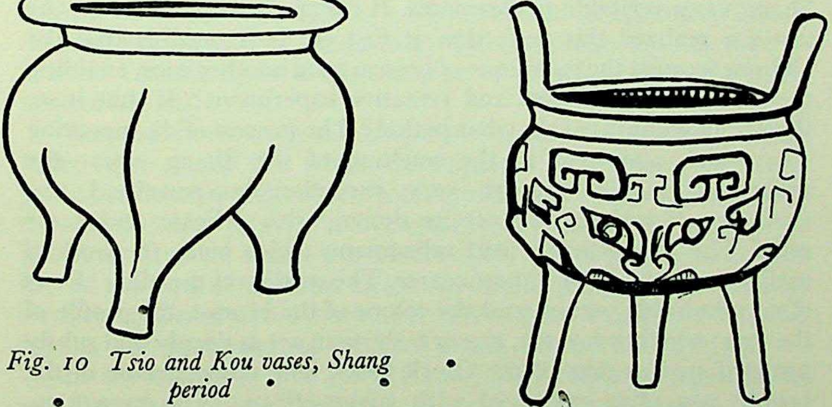


Fig. 10 Tsio and Kou vases, Shang period

central Asia are thought to have brought it to China) served not only as a means of transport but also as a weapon of war. No other cavalry was then known. The warriors fought in chariots, exactly like the Egyptians or the heroes of the Trojan war. As a result of this general use, when a corpse was buried with all its goods, no one dared forget the only means of locomotion at its disposal. Here we find the explanation of the great number of skeletons of horses found in the Shang tombs—one alone contained thirty-eight—and the numerous remains of chariots. Note the strange fact that some tombs only contained horses, others only chariots. To this funeral custom we owe the discovery of an immense number of bronze ornaments, all wooden parts of the chariots having disappeared because of the humidity of the soil. These ornaments, which are of great beauty, generally consisted of applied ornaments, hub-caps, and possibly also of guide-rings for the reins, such as those we find at Luristan. Finally, there were various ornaments from bits and bridles which remained *in situ*, with the skeletons of the horses whose harnesses they decorated.

But, however interesting the different uses of bronze of the period, it is the vases which are of particular interest. At that period the technique and art of bronze had already attained a perfection which would never be surpassed. The meaning of the shapes, the richness, the fantasy, the symbolism of the decoration reveal an art which had already reached the summit of its possibilities. It was modified during the following dynasties; it changed its shapes and allegories but never perhaps, not even under the Chous, do we find that grandiose moderation of line, that wealth of allusive ornamentation which gave birth to all those monsters who constitute the traditional vocabulary of the Chinese Bestiary.

Even the technique by which the bronze is worked makes the Shang vases veritable masterpieces. It cannot be supposed that the smelters realized this perfection at first go. Is it possible that the Chinese learned the technique of bronze from another race, enabling them to avoid indecision and tentative experiment? If that is so, then from what race? At what period? The process of disappearing wax which was used in the smelting of the Shang vases—the collapsible mould appears very exceptionally—permitted the execution of minute and precise design, with delicate and exact relief. The Shang artists used refinements which make the work of earlier periods appear almost coarse. The quality of the alloy allows of an admirable patina, and the colour of the bronze, the profile of the vase, whether *kou*, *tsio*, *ting* or *li* show an art as deeply and subtly proportioned as that of the Greek vases. The monochrome of the bronze was often enhanced with colour-effects. (The bronze no longer appears monochrome because the vases have acquired a marvellous colouring from their thousand-year sojourn in the earth —shades of red, turquoise-blue, aquamarine-green, sometimes highly iridescent. But the Shangs only knew these vases when they were *new*.) The bronze-founders sometimes encrusted the design with a sort of black varnish, which gave an effect analogous to the *niello* of earlier periods, and sometimes used a sort of red encrustation, the quality of which has not yet been defined as it has become confused with the patina.

This is not the place to define the different sorts of vases or the uses to which they were put. The reader can find this information in the book by Grousset, already cited, in the work by Ardenne de Tizac on Chinese Art, and particularly in the work of Voretzsch, *Altchinesische Bronzen* (Berlin, 1924). Special importance should also be attached to Paul Pelliot's courses on bronze vases held at the *Institut des Hautes Etudes Chinoises* in 1929.

The decorative motifs which cover these vases contain all the themes that were later encountered in the Chou period. Moreover, these themes were closely allied to the final usage of the vase, the monsters represented there being entirely symbolic and the naturalistic representations of real animals also being connected with concepts or allegories. Even themes which appear geometric, such as the Greek key pattern, can easily be interpreted as nothing but stylization of the very old sign known as *cloud and thunder*. This incarnates the movement of life; its translation into spirals, into "S's" and "Z's", has probably the same meaning as the famous *Blitzzeichen* in ancient Nordic art. But whereas the *Blitzzeichen*, as seen, for example, on the points of the spears of the ancient Teutons, often accompanied by runes, strikingly resembles the representation of lightning in Hittite art (there are statues of the god Teshouk looking as if he is brandishing a sign of a flash of lightning, issuing directly from Teutonic decoration), the cloud and thunder sign in archaic Chinese art is a realistic copy of a flash of lightning in its typical zig-zag.

There has been much discussion on the value of this sign, which lasted throughout the whole development of Chinese art. It is probable that this original symbol represents the original of originals, the breath, the primordial movement of life. In the canons of painting fixed by Hsieh Ho in the sixth century A.D., it figured first in the laws of the artist as the rhythmic vitality or the spiritual rhythm expressed in the movement of life. What Okakura translates as: the vital movement of the spirit across the rhythm of things.

"In the beginning was the rhythm", the Chinese artists seem to say. Laurence Binyon expressed this well when he wrote:

"The power of rhythm is such that not only sounds and forms and colours, but the meanings associated with them become different, take on a new life, or rather yield up their full potentiality of life, fused into radiance and warmth as by an inner fire. Perhaps no people has ever been stirred by a great idea till that idea was animated and made memorable by finding its right expression in rhythmical phrase."[1]

To look at Shang vases brings to mind the Sung poem which runs: "Art produces something beyond the shape of things, although its importance consists in preserving the shape of things." All the symbols presented here actually retain the profound vitality of living things; even when they fix this vitality in an abstract sign, the sign is then charged with an enormous dynamic. That is why that compact force we have noted in the Shang statues, also animates the decoration of the vases and brings the motifs to a climax beyond which there could only be an explosion.

This is what makes these animal representations which cover the Shang bronzes so alive that they almost seem to move. One can almost hear the bronze elytrons of the cicadas vibrate. The dragons writhe in a sky filled with cloud and thunder. There are undulating serpents, buffaloes, bats, and finally the mysterious animal called the *t'ao-t'ie*, whose nature has not yet been identified, even by experts in Chinese art.

Supporters of the Scytho-Iranian origin of Chinese art look for the origin of the *t'ao-t'ie* outside China. The *t'ao-t'ie*, says Rostovtzev, "has the form of an animal mask, consisting of a pair of eyes, a pair of ears, two horns, and a crest. The animal certainly belongs to the family of felines. I have not the slightest doubt that what is meant is a horned lion-griffin, the most popular animal in Persian art".[2]

Others see the *t'ao-t'ie* as the stylization of a real animal, the wolverine. André Leroi-Gourhan seems to offer an interesting solution in his work on the *Bestiaire du Bronze Chinois* (Paris, 1936, p. 17): "We must resign ourselves to regarding the mask of the *t'ao-t'ie* as an ingenious adaptation of an incomprehensible motif. Once again, the Chinese are primarily to blame. The allusions in the most ancient texts to the *t'ao-t'ie*, an anthropophagous monster, without a body, show complete ignorance of the primitive meaning of the theme. We would not dream of denying the existence of the *t'ao-t'ie*, but we think it only exists on the Chou-style vases because the Chinese have seen it there. This interpretation is confirmed by the fact that vases with archaic decoration always include the frontal line or ridge and the *t'ao-t'ie* with indissociable elements only figures on manifestly later vases, the decoration of which is influenced by a completely different ideology."

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[1] *The Flight of the Dragon*, London, 1925, p. 19.

[2] *The Animal Style in South Russia and China*, Princeton, 1929, p. 70.

The *t'ao-t'ie* is no more a representation of an animal than the *lei-wen* or cloud and thunder sign is an entirely realistic figuration of a flash of lightning. They are symbols which must be interpreted, and Grousset[1] provides the clearest key when he tells us to look behind the tangible image for the idea which led the artist to produce it. "Far from seeking the origins of the *t'ao-t'ie*, of the dragon or similar apparitions, outside China, their own character shows the true mark of the Chinese genius. The special contribution of the archaic Chinese spirit, during the terrible period of the 'Hegemons' and the 'combat of the realms', which seems to have been one of the most sombre in history, was precisely to translate into art the omnipresence of mystery, always ready to be resolved into terror. The affinities between Mexican and Chou art can be explained, as Vignier suggests, by an analogous state of mind produced by similar political conditions. Two societies bowed beneath a régime of blood . . . ; peering into their fate and seeing only a glimpse of a masked *t'ao-t'ie* threatening them from the midst of the cloud. The artist did not put this omnipresent menace, this latent terror, into concrete form—or if he attempted it, the half-glimpsed apparitions were devoid of all realism. The mystery which crushed man in the face of his destiny continued in its entirety. Vignier undoubtedly presents the very formula of archaic Chinese art when he said, 'in China the sole aim of the artist is not to represent the real world but, on the contrary, gradually to confront reality with a world as moving and imprecise as the clouds. And if an animal seems to stand out from the sparse *t'ao-t'ie* on the sides of a ritual vase, it is not a known beast that the artist tried to reproduce realistically. He was almost entirely concerned with 'creating a memory which clothed, furthermore, an animal appearance'. Chou aesthetics are entirely dominated by this double preoccupation: to suggest mystery by fearful apparitions without dissipating them by putting them into concrete form; to depict the shudder of Destiny in its full force, without this force unveiling itself enough for man to face it eye to eye. Mystery and terror represent the full inspiration of these wild centuries."

When Grousset says "Chou", we say "Shang and Chou": at the time when his volume on *Civilisations de l'Orient* appeared in 1930, the excavations at Ngan-yang had scarcely begun and Chinese art had not yet yielded up its secret. But what is true for the Chou dynasty is still more so for their predecessors, who buried hundreds of human victims with their dead, and engraved that terrible sign of the ghost which causes so much terror on the divinatory bones.

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[1] *Op. cit.*, p. 36.

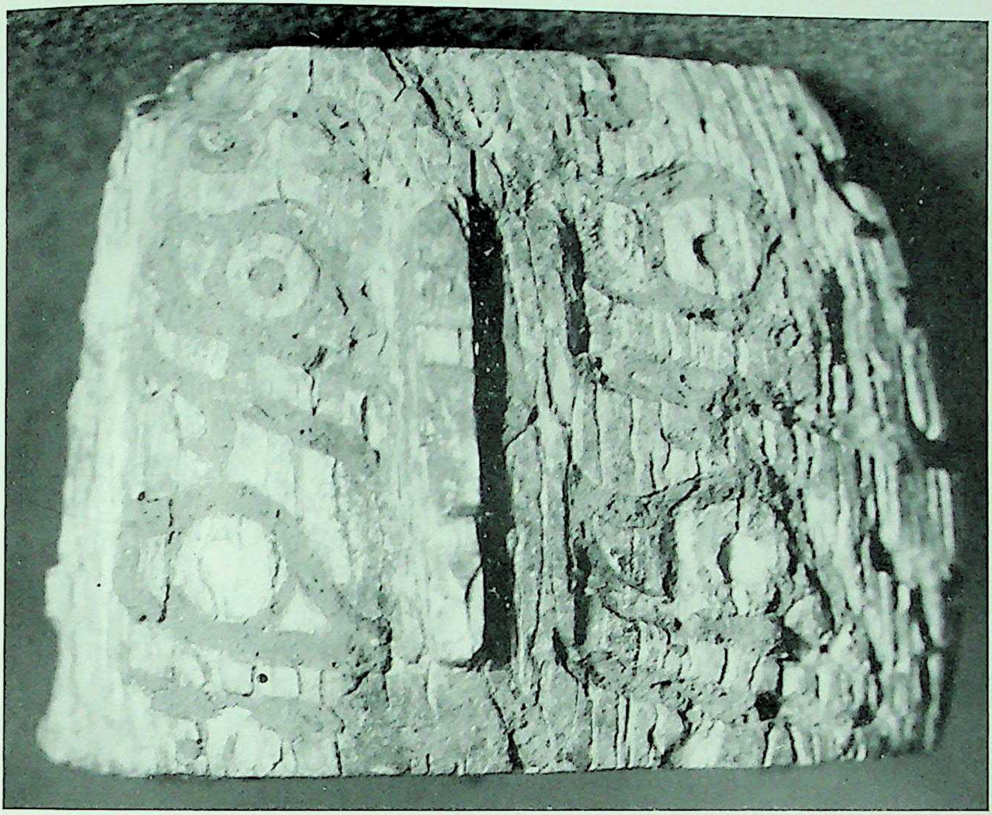
The dragon or *Kouei* has also given birth to innumerable interesting hypotheses. The Kouei is not an animal properly speaking, but the deformation of an animal. Thus there are dragon-rams, dragon-birds, dragon-buffaloes. The idea of the dragon proper emerged much later from these deformations and from this mixture of composite animals, with all the ideas which the figure of the dragon contained and which in its turn was but a variety of Kouei.

As already mentioned, there has been much discussion as to whether these motifs were Scythian or Chinese. One can go even further: yet more striking analogies appear than those between the art of the Steppes and the art of Honan which are, in fact, neighbours. There is the relationship to Mexico, which Vignier has pointed out. And, more striking and still more strange, the resemblance between animal deformations on archaic Chinese bronzes and those still used today by the Indians in North America. The cutting up of the animal motif into two pieces placed symmetrically on either side of a median line is such a rare phenomenon that it is very curious to find analogous manifestations at such great distances and in such different cultural milieux that all idea of communication must *a priori* be discounted.

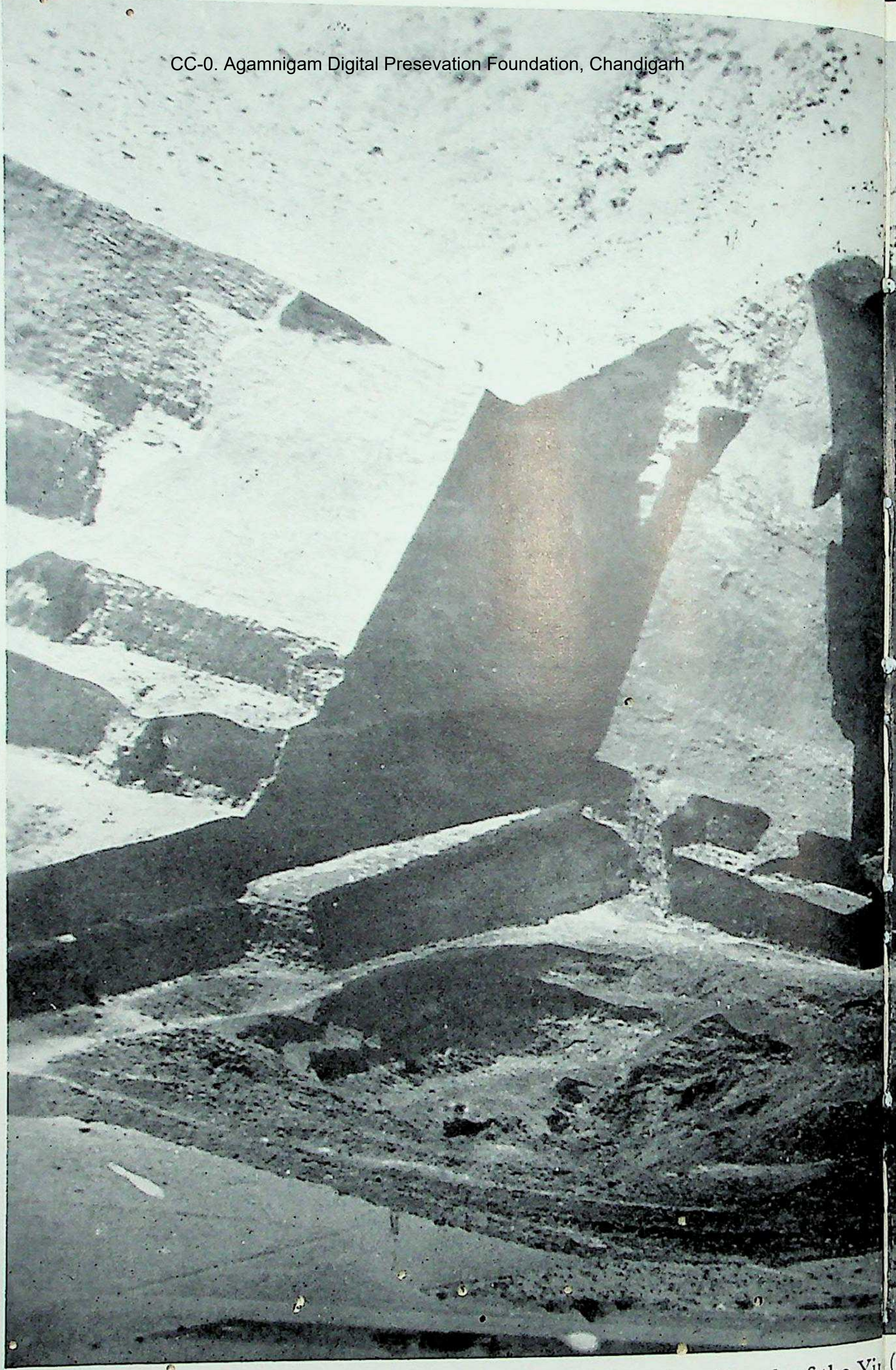
This deepens still more the mystery surrounding the archaic civilization of Shang, resurrected by the excavations at Ngan-yang. Persian ceramics and Indonesian and Indian art also present analogies with the art of the Shangs, which must be taken into account. The mystery became even more complicated when, at the beginning of the twelfth century B.C., the old dynasty of the Great City of the Shangs disappeared to give way to the newcomers: the Chous.

According to the ancient annals, the Chous came from the Province of Shensi and when they invaded Honan, were little more than barbarians, compared with the refined inhabitants of the Great City of Shang. The Chous are not unknown to us. While their predecessors until recent years appeared sunk in the darkness of a mythical period, the dynasty which reigned until the arrival of the Tsin is not strange to us. We knew their art and history well, even before recent excavations at Siun-hien. Magnificent tombs have been found on this site, believed to be the royal sepulchres of two great figures of the dynasty. But with this period we are not limited to funeral furnishings and divinatory bones. Abudant Chou literature exists, proving that we have now left the proto-historic period of the Ngan-yang civilization and entered history proper.

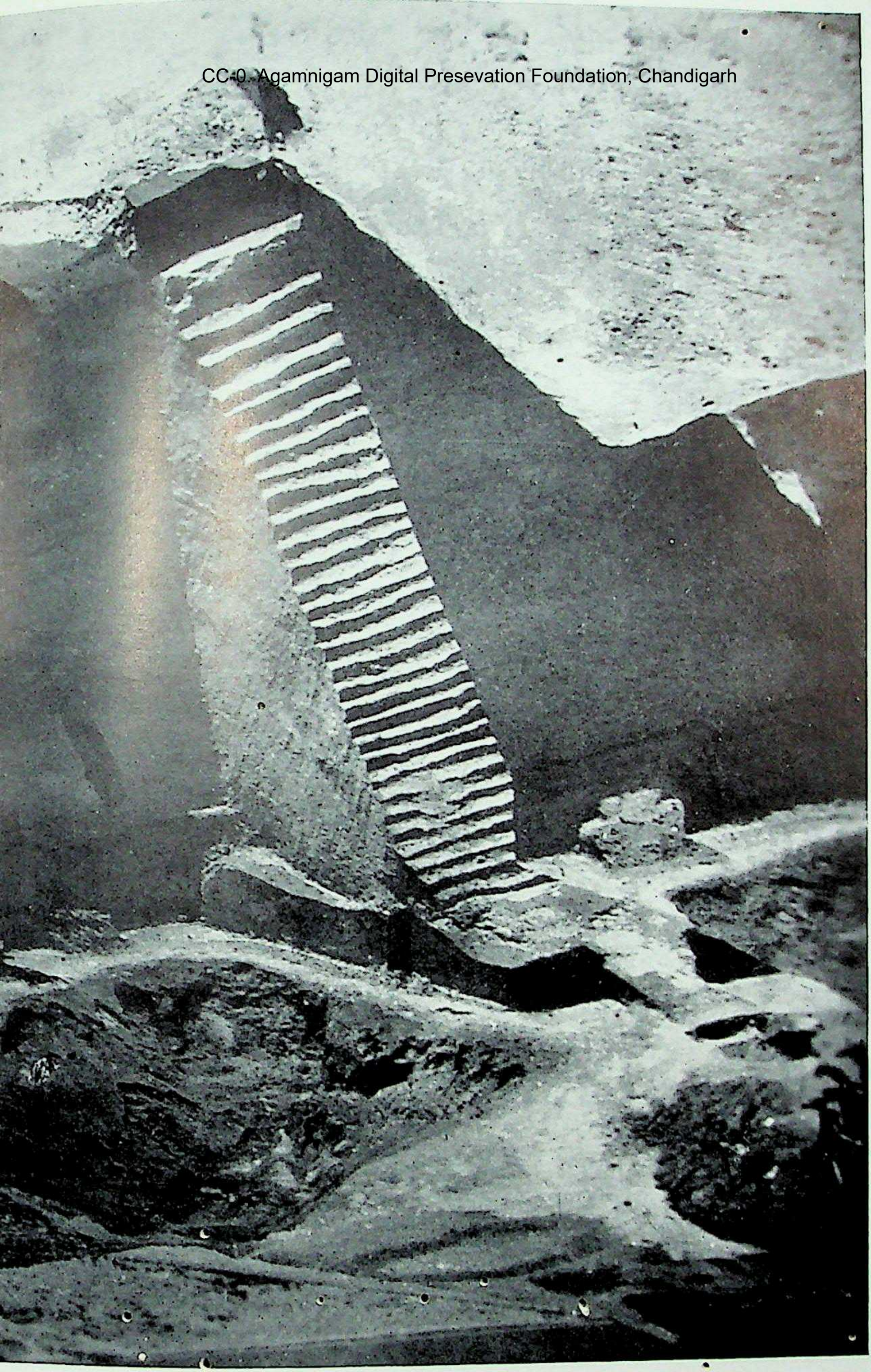
But we still owe the most picturesque detail to the tombs. A typical



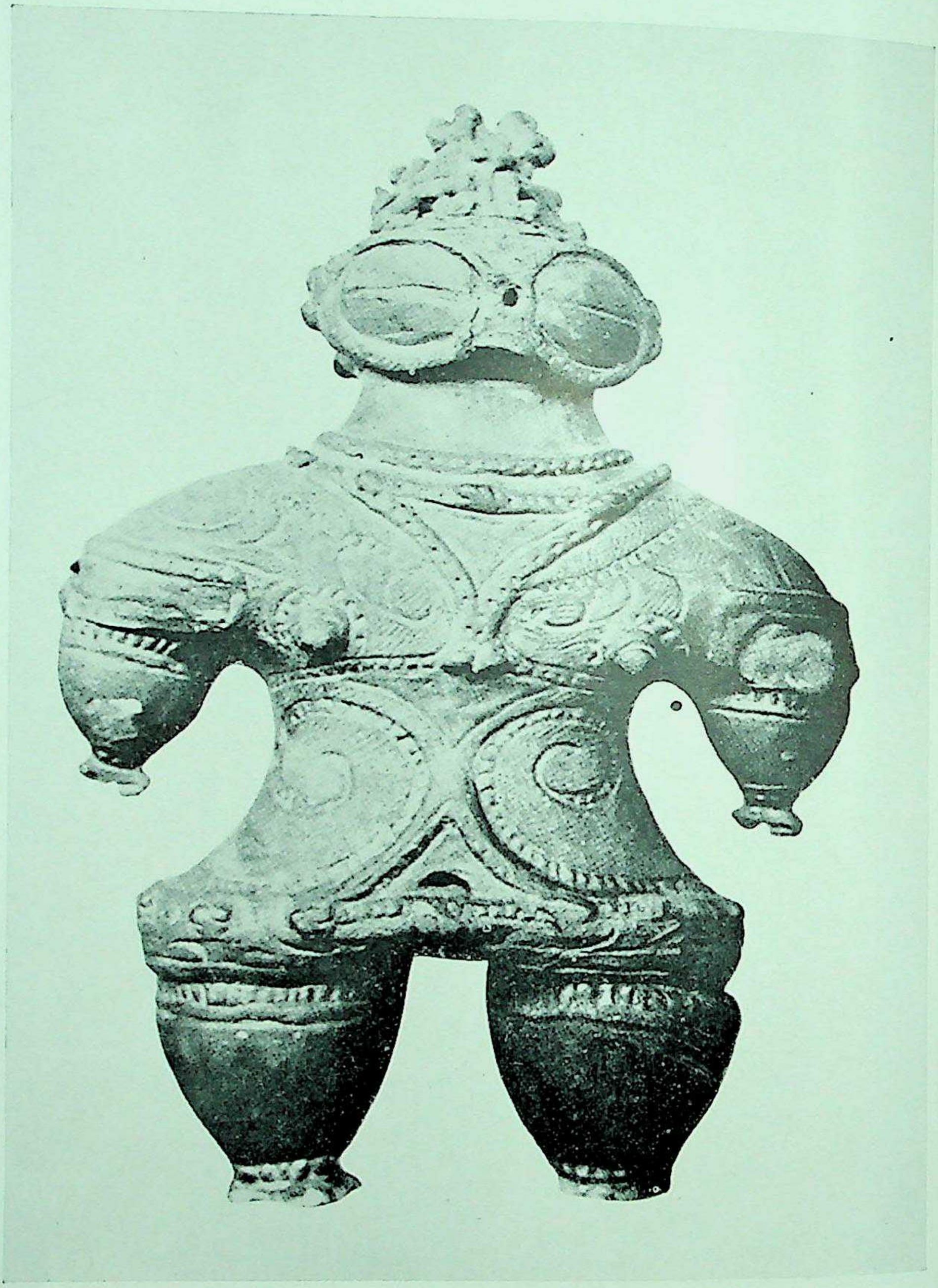
Engraved bone known as dragon's bone



Royal tomb of the Yi



Shang) at Ngan-yang



Jomon shiki in terra cotta, proto-historic period element of the Chou dynasty is the sacrifice of animals, remains of which have been found in the tombs at Siun-hien. Human sacrifice had in fact become extremely rare under this new dynasty, probably not as a result of a softening of customs, but only because ideas had changed.

It must be said once and for all that neither the idea of cruelty nor that of inhumanity must ever be associated with the presence of human sacrifice. In reality, human sacrifice and animal sacrifice corresponded to two very different states of culture, and one must on no account discriminate according to sentimental criteria. In totemic societies, man is sacrificed because the animal is sacred; in non-totemic societies or those which are ceasing to be totemic, animal sacrifice is substituted for human sacrifice, not for reasons of kindness or pity but only because the animal, having lost its religious character, can become a victim. The sacrifice of Abraham, who substituted an animal for a human victim, can thus be interpreted as the transition from a totemic to a non-totemic milieu.

There are, therefore, several stages in Chinese civilization. The stage of human sacrifice, common to the Neolithic Chinese and the Shangs; of animal sacrifice, as under the Chou dynasty, of the replacement of human victims by representations, as under the Han and later. It is clear that parallel with this development animal decoration on bronzes became more stylized under the Chou, as though the twilight of the animal totem is also manifested here. The realistic and monstrous beast lost the magic violence evident on the statues and vases of the Shang dynasty.

Creel gives a striking description of one of the Chou tombs discovered in excavations at Siun-hien: "No human remains were found in it. At the bottom of the pit were seventy-two horses, twelve chariots and eight dogs. The horses were evidently hitched to the chariots, at the time of interment, but the wheels had been removed from the chariots. Each of the dogs had a bell hung about its neck. Earth was probably thrown in from the north side, for the horses were all at the south side, in the greatest confusion as if something had frightened them and caused them to run that way. The dogs were found at the base of the south, east and west walls, where they were obviously trying to climb out as the earth was thrown in upon them. After the dogs and horses were covered with earth the wheels of the chariots were thrown into the pit, and it was filled up to the ground level."[1]

But under the Chou dynasty, religion had also changed. Human sacrifices were no longer made, or at least only very exceptionally. Animism, which led to deification of the forces of nature, had lost its power. The Chinese religion obviously always required a feeling of communion with nature, a sentiment which has never ceased to inspire Chinese art. The most beautiful temples, even of recent periods, are those dedicated to the Sky and the Earth, but it would seem that the custom of offering sacrifices to the mountains and the rivers were lost. We know no more than that they were mysterious divinities who, under the Shang dynasty, hid behind enigmatic names such as Dragon-Daughter, Serpent-Spirit, Wind-King and Mother of the West.

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[1] *Op. cit.*, p. 318.

Excavations by the Chinese archaeologist Kuo Pao Kiun in 1935 and 1936 in Honan, produced a magnificent collection of tombs from the Chou period. Some of these were covered with enormous tumuli constituting veritable artificial mountains. Others, like the Shang tombs, were bare of tumulus, But both types were equally rich in all manner of objects.

In 1957, archaeologists discovered the tomb of the Emperor Ming Wang-hi, who died in 1620 after a reign of forty-eight years, the longest of the Ming dynasty. The marble mausoleum, decorated with sculptured doors, had a circumference of 2,600 feet; it was found beneath a tumulus 20 feet high which took twenty-two months to clear. Wearing boots of Damascus leather, crowned with gold, the Emperor Wang rested beside his two wives.

Other new discoveries enable us to distinguish in the archaic productions of Chinese art between Shang and Chou. These were easily confused before the work performed in 1935 brought to light a perfect culture which existed at a period when we thought we had only myths and legends. They also put the civilizing influence of the Chou in its proper perspective. This was stressed before it was known that the Chou were a race which came from the west, infinitely less civilized than the ancient inhabitants of Honan. Instead of bringing civilization to the Shang, it was the Chou who received everything from them, assimilated their culture and imitated their works of art, at least initially.

Chou tombs have been located in the region of Lo-yang and partially excavated. It is a site of exceptional richness, this valley of the River Lo in western Honan, where Chou, Han and Tang cultures have left admirable remains. Tombs of kings and notables are scattered the whole length of the valley and on the slopes of the Mang mountain. It needed the coincidence of a railway line crossing this region to disturb the thousand-year peace of the tombs. So far, tombs of the Han period have been found in great abundance at Lo-yang; tombs constructed of hollowed bricks, stamped with domestic or fantastic figures, sometimes showing processions of impossible monsters moving along the walls of the tomb, sometimes showing the most astonishing scenes of forest hunts or episodes from everyday life, with portraits of soldiers and scholars of surprising vivacity.

The discoveries at Lo-yang have considerably enriched our knowledge of the Hans, particularly as far as the family life and writing of the period are concerned. But with the Han dynasty we reach a domain which has been prospected for a long time. It is impossible to say we now know everything there is to be known of this period of Chinese history. Probably not. Excavations by Jansé, in Tonkin, for example, have brought to light Chinese tombs of the Han dynasty containing completely new objects, with valuable information. Barring unexpected discoveries, however, the Han civilization is now fairly well represented in the large museums of Europe and America (the most beautiful tombs of Lo-yang, discovered by White, are in the Museum of Toronto) and their history, customs, and traditions have been the object of very complete studies.

Moreover, we do not propose to give a history of Chinese archaeology here, but only to describe the discoveries of recent years. We have only touched on those excavations which have brought to light, amidst gusts of wind and dust, in a tumult of spades and pickaxes, the Great City of Shang.

CHAPTER V

THE PREHISTORY OF INDIA

HARDLY HAD archaeologists begun to realize that the first civilizations were not merely local phenomena, than chance put them on the track of an absolutely unknown culture in India, several thousand years earlier than anything known before. At that period, Mesopotamian excavations had crossed the muds of the Flood, and beneath the territory which had witnessed the great catastrophe, the remains of civilizations even earlier than that far-off period had been discovered. At this time, too, Egyptian archaeology had gone beyond the antiquity of the oldest dynasties and reached the mysterious cultures of Badari, Tasa and Fayoum. The Hittites had been aroused from their thousand-year sleep; Pumpelly had perceived traces of towns in Turkestan contemporary with the oldest Sumerian cities, and Sir Aurel Stein had found centres of civilization in the ruins of Baluchistan which might possibly have fertilized the whole of the known world. Antique Elam had been resurrected together with the mysteriously beautiful Susian pottery.

At this period the subterranean bonds connecting civilizations to one another began to be discerned, aesthetic and technical resemblances became apparent, and even the routes which facilitated exchange between the great cultural centres began to be located. Finally, the great syncretism of this primordial civilization which was earlier than all the annals, was revealed.

If engineers building a railway in the Indus valley had not disturbed some insignificant heaps of bricks, whilst installing their permanent ways, it would undoubtedly still be unknown that at about 3000 B.C. towns of great importance had stood there. In this area, the oldest remains had gone no further back than the first Moslem period. When archaeologists attacked the piles of bricks, they did not find one isolated site, but a whole collection of cities. As research proceeded, other ruins belonging to the same civilization were brought to light.

Harappa appeared first and then Mohenjo-daro. Enough was already known of this Indus civilization to elucidate its characteristics, define the customs of the inhabitants and study their art, religion and techniques. Then still other sites appeared, including Nal, probably the oldest city in this civilization, Rupar, Ali-Murad,

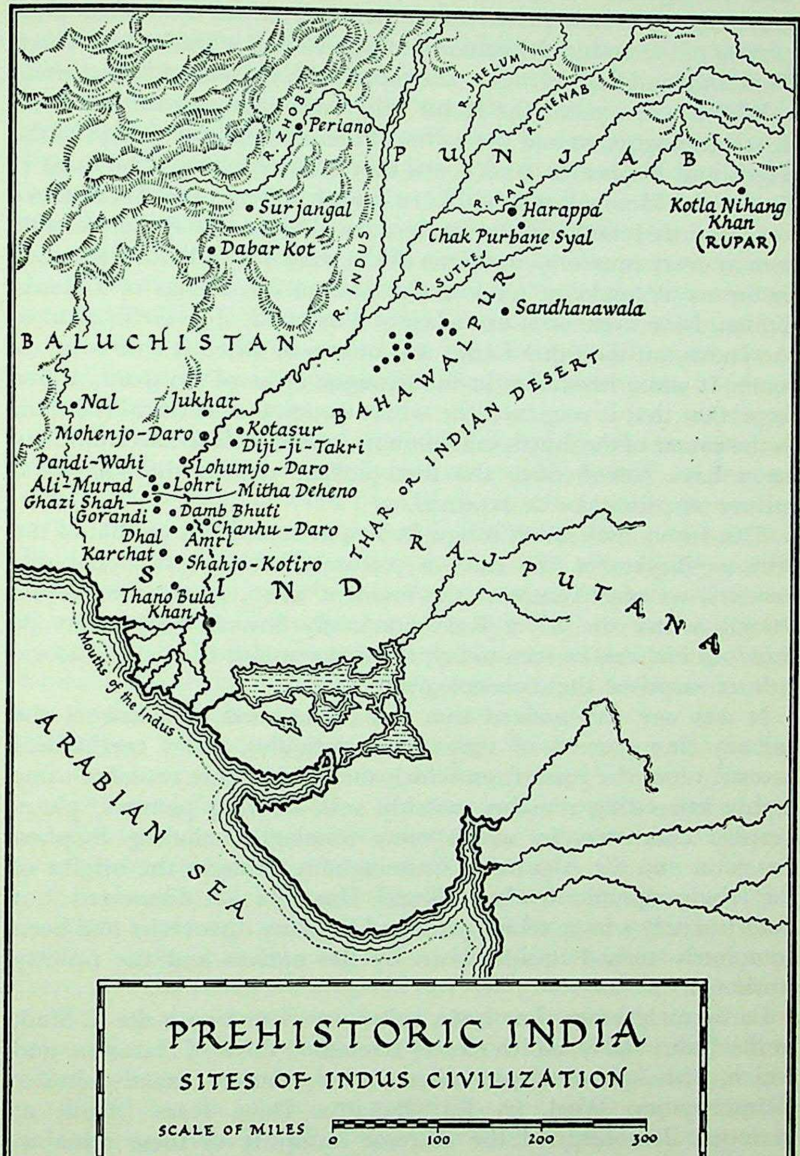
R. ZHOB
Periano
R. JHELUM
R. CHENAB
P U N J A B
R. RAVI
Harappa
Kotla Nihang Khan (RUPAR)
Surjangal
Dabar Kot
R. INDUS
Chak Purbane Syal
R. SUTLEJ
Sandhanawala
BAHAWALPUR
BALUCHISTAN
THAR OR INDIAN DESERT
Nal
Jukhar
Mohenjo-Daro
Kotasur
Diji-ji-Takri
Pandi-Wahi
Lohumjo-Daro
Ali-Murad
Lohri
Mitha Deheno
Ghazi Shah
Gorandi
Damb Bhuti
Dhal
Chanhu-Daro
Amri
Karchat
Shahjo-Kotiro
SIND
RAJPUTANA
Thano Bula Khan
Mouths of the Indus
ARABIAN SEA
PREHISTORIC INDIA
SITES OF INDUS CIVILIZATION
SCALE OF MILES
0
100
200
300
LP

Fig. 11 Sites of prehistoric India

with its gigantic fortresses, Amri, Jukhar, Janghar and Chanhudaro. Enough is now known about them not only to trace a complete picture of the Indus civilization but also to link affinities with Susa, Turkestan and Sumer, and to connect it with the sites of Baluchistan.

Within a few years, the Indus valley was engaging the attention of archaeologists, as had the valley of the Nile and the valleys of the Tigris and Euphrates. And it was even more exciting. The ruins of Egypt and Mesopotamia had been known a long time. Work there has proceeded methodically for decades. Objects found there can be seen in every museum, and some of the sensational discoveries, such as the royal tombs at Ur and the funeral furnishings of Tutankhamen, have even been abundantly illustrated. The civilization of the Indus, on the other hand, was unknown when it rose from its tomb. It was a revelation in the strongest sense of the word, and so important that it reopened the whole question of cultural relations in the course of the fourth millennium. And as little more than thirty years have passed since the first pickaxe moved the soil, even greater surprises can be expected.

This Indus civilization is now known as completely as that of the Nile or Euphrates. To trace a picture of these sensational discoveries, we must return to the moment when, in the area of the Punjab where the River Ravi previously flowed, near where its dried-up bed can be seen today, the first remains of this prehistoric culture surprised the archaeologists.

It was one day noticed that the bricks used to construct the railway line seemed of very great antiquity. After methodical investigation, the ruins from which the bricks came revealed some highly interesting remains, notably seals bearing pictures, pictographic characters in which some scholars, including Stephen Langdon and Sir Alexander Cunningham, thought the origins of the Hindu alphabet could be found. Harappa was discovered, but unfortunately a town which promised so many discoveries had been completely turned upside down by the natives and the railway workmen.

Fortunately, some time later, ruins were found on a site in Sind, in the Indus valley, which closely resembled those of Harappa, and which, although over 400 miles distant, showed exactly similar characteristics. Work by Rai Bahadur Daya Ram Shanit at Harappa demonstrated the extreme antiquity of these remains. Another fortuitous circumstance unearthed the ruins of the town on the Indus known as Mohenjo-daro. A Hindu archaeologist, R. D. Banerji, while studying a Buddhist monastery on the site, established that the bricks of which it was built were old material, much older than the monastery and very similar to those used at Harappa.

The Director of the Indian Archaeological Service, Sir John Marshall, who has written an authoritative work on the subject[1] decided that the site of Mohenjo-daro had not been as disturbed as that of Harappa, and so without completely abandoning the site of the first discovery, transferred the greater part of the work to the ruins of Mohenjo-daro. After some time it became quite obvious that the remains found on the two sites were exactly similar and belonged to the same civilization. All that remained to be discovered was its extent and the nature of its cultural contribution.

Mohenjo-daro, stifled beneath a pile of bricks, was resurrected. Its broad avenues, bordered with high houses, rose from the ground, its roads cutting each other at right-angles, its own particular type of dwelling, its drains, its bathing establishments. In a few years, under the direction of English and Hindu archaeologists, Mohenjo-daro began to live again.

While excavations were actively proceeding at Harappa and Mohenjo-daro, other archaeologists scoured Sind, studying heaps of bricks which had not even been glanced at before. In the débris, other unsuspected towns appeared. Cultures, older perhaps than Mohenjo-daro, came to be known from remains of dwellings, pottery and seals. It can almost be said that overnight a whole civilization rose from the soil. This civilization was found to be widely extended. It not only existed at Harappa and Mohenjo-daro, but also in the foothills of Khirthar in Baluchistan, in the state of Kalat, and at Nal not far from Simla. It may be concluded therefore that this Indus civilization even extended to the valley of the Ganges and that its influence may perhaps have shaped the whole of Indian prehistory. Furthermore, this civilization also extended in time; various levels of culture can be distinguished representing numerous centuries and possibly several thousand years of occupation.

It is therefore to Mohenjo-daro in particular that we must turn to learn about the prehistory of India. This prehistory has been termed Chalcolithic because tools made of silex have been discovered there. But this description should not really be retained; the Indus civilization also knew bronze and copper. It was by no means a lithic culture, and even if stone plough-shares and splinters of silex, which probably served as knives, have been discovered there, it does not follow that the inhabitants of the sites had not developed beyond the stone age. Reasons of economy prolonged the use of silex tools, just as in Palestine, religious motives maintained the use of stone instruments in certain ritual applications long after the discovery of metal.

It must be added that, although it has been possible to make a meticulous exploration of the Mohenjo-daro ruins, excavators have not been able to go very deep, because the Indus has changed its course during the centuries. Its bed has been raised at least 20 feet, according to the scholars, and the lower parts of the town are flooded today. Perhaps, when it is possible to pump these areas dry, other civilizations may be discovered, earlier than those which we are studying. Finally, it must be said that the site of Mohenjo-daro, as known and cleared today, occupies a surface area of over 260 hectares, and the town was probably much larger than this.

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[1] *Mohenjo-daro and the Indus Civilisation*, Probsthain, 1931.

When the archaeologists arrived, the site of Mohenjo-daro consisted of a collection of brick-coloured, ochre-red or bright red tumuli, clearly distinguishable from the greyish colour of the surrounding soil. These tumuli were not in fact made of earth, but of bricks, from buildings which the natural deterioration of time had demolished. Wind and rain over a period of five thousand years had caused the upper parts of the houses to cave in, both covering and preserving the lower portions, so successfully that the débris had only to be removed for the plan of the streets and dwellings to be discovered in as good condition as formerly.

Mohenjo-daro, in the language of Sind—and it is known that India has numerous dialects—means *the place of the dead*. But almost no corpses have been found at Mohenjo-daro, apart from a very few persons who seem to have died a violent death. It is rather the corpse of a city, and it was this corpse that the archaeologists had the task of resurrecting.

Ernest Mackay, in his excellent book on *The Indus Civilization*[1] described Mohenjo-daro as consisting of "one very large mound, roughly thirteen hundred yards long from north to south, and about six hundred and seventy yards wide, with smaller mounds to the north and east. About two hundred yards away to the west rises another mound, not so large as the first, but loftier, measuring about four hundred and forty yards from north to south by three hundred and thirty yards from east to west, and having a number of hillocks on its northern, southern, and south-western sides. It is uncertain whether these two large mounds were originally one, for no deep digging has as yet been done in the gap between them; certainly they appear quite distinct today. The larger mound to the east appears to a casual beholder to be a complex system of low mounds, separated by ravines; these ravines actually represent the ancient thoroughfares, which have, in the course of time, become channels for the rains that normally fall in Sind in the summer months. One of these streets, running from east to west, is still used; in fact,

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[1] Dickson, London, 1935.

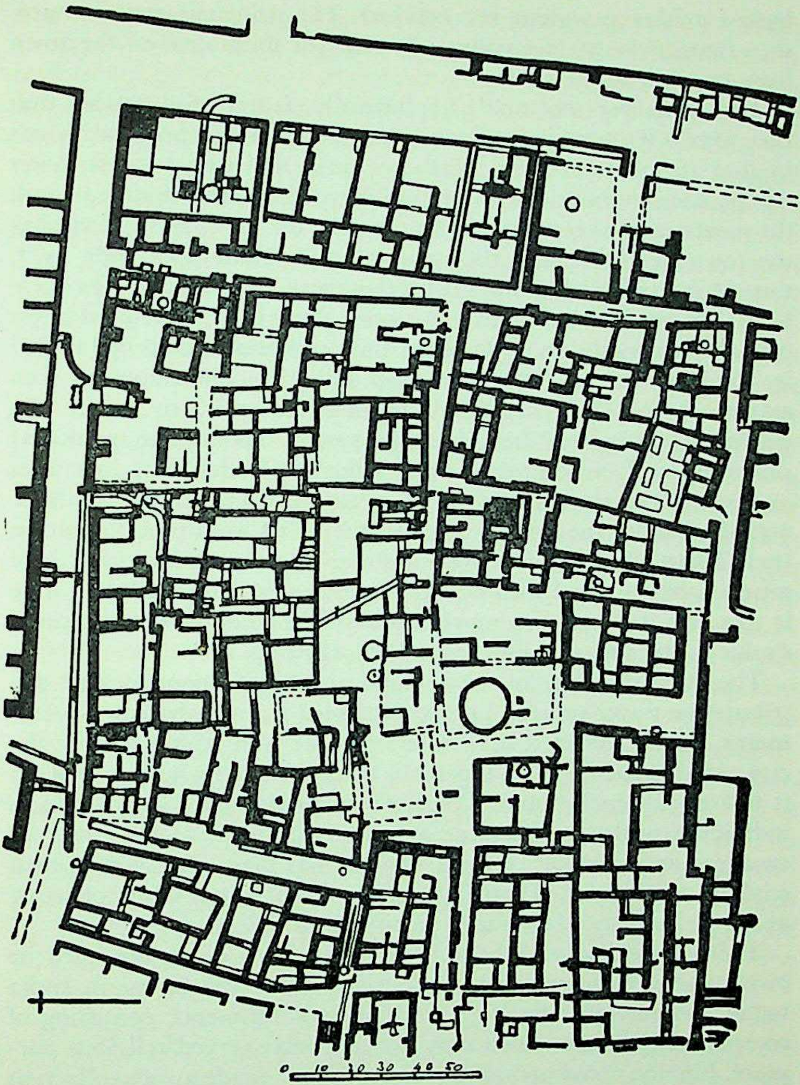

Fig. 12 Plan of Mohenjo-daro

it forms the main approach to the camp from Dokri railway station, some seven and a half miles away."

Some of the houses are so well preserved that they could be occupied today, and use made of the bathroom as well as the irrigation and drainage services—the pride of the town-planners of Mohenjo-daro. For a primitive town, in fact, the city of the Indus lacked neither grandeur nor comfort. The principal avenues were sometimes over 35 feet wide, and some of them crossed the town from one end to the other.

The roads were not made haphazardly. It has been noticed that they were orientated in the direction of the wind; the principal winds in that region blow from north to south and east to west. Very wisely, the inhabitants of Mohenjo-daro considered that the wind, the most active sweeper, was on the whole the best means of making the town healthier, and they opened their boulevards wide to it, thus perpetually airing and ventilating them. Dust could never have been absent in those circumstances, but the Mohenjo-darians probably worried very little about this, and preferred to be blinded by the fine dust of the bricks than stifled by the miasmas of an eastern town. They neglected nothing, however, to ensure the evacuation of refuse; their drainage system has been miraculously preserved and, according to archaeologists, is the most ingenious and complete system known to antiquity. The brick conduits, arranged under the streets, received the efflux from pipes placed in each house, and were linked to stone sewers. At intervals these sewers were supplied with cesspools which were easy to clean, while it was only necessary to move a few bricks to clean out the small drains in the streets if they became blocked up.

The Mohenjo-darians took equal trouble to convey and distribute the water supply. They constructed a whole system of water mains, which collected the water from the rain falling outside the city and distributed it via ingenious brick conduits which conducted it to wells in each house. The poorest inhabitants did not possess individual wells but had free access to the wells of the rich. An excellent arrangement of brick benches has been discovered which enabled them to await their turn for distribution, while chatting at leisure—always a favourite pastime in the East.

These water mains fed the bathrooms. Each house possessed its own—and they were much the same as those still in use in India today. There were also large bathing establishments, consisting of several small rooms which may perhaps have served religious purposes. Finally, constructions have been found, made up of a collection of cells, with a bathroom under each, as though they were a sort of convent where each monk had direct access to his private bath.

Roads have even been found covered with a sort of Macadam made of fragments of pottery and bits of crushed brick, soaked and tamped, probably to avoid the dust and mud which are the scourge of Far Eastern towns.

Those who walk among these ruins today and who enter the houses and the bathing establishments, cannot but admire the ingenuity of its ancient occupants in building an agreeable city, arranged for the wellbeing of its inhabitants, with no other means of construction at their disposal than brick. They possessed some stone and some wood, but brick served all purposes and the earth needed for its manufacture was found in abundance in the alluvial soil of the river. It was simply placed in frames, with no foreign ingredients added, and then fired in an oven. The bricks were then carefully put in position and strengthened by a mortar of mud, or, in some cases, of limestone or plaster. All buildings in the city were constructed in the same manner, public monuments and private dwellings, drains and wells alike.

The Mohenjo-darians never thought of decorating the brick or of making it into a decorative motif. In this, they did not share the extreme ingenuity of the Mesopotamians, who obtained a wide range of ornamental effects from the reliefs which brick buildings facilitate. Moreover, they seem on the whole to have had only a very mediocre aesthetic imagination. Or rather, they separated everything connected with practical utility from anything relating to art. As far as habitation was concerned, for example, they thought only of hygiene and comfort. The roads must have been extremely monotonous for the walker, who saw only a succession of walls without doors or windows, at least on the ground floor (the upper storeys have naturally disappeared). The absence of windows was undoubtedly aimed at escaping the outside heat, and is frequently found in the East. But the absence of doors is less easily explained. They only existed very rarely on the principal roads and then generally opened on to narrow lanes. The houses consisted of several floors; Mohenjo-daro was an over-populated town in relation to its dimensions, an important centre of commerce, where shops and dwellings were crowded together within a narrow space. Perhaps the inhabitants were so absorbed in their businesses that they did not bother to give an agreeable and varied appearance to the ordinary backcloth of their life.

Mohenjo-daro appears to have been a strictly utilitarian town. And particularly noticeable is the absence of temples, usually the first thing archaeology meets when it excavates a site. There are no temples at Mohenjo-daro—at least none have as yet been discovered there. This gap is strange and extremely regrettable when it is remembered how much has been learned from Egyptian and Sumerian temples. There do not seem to have been palaces here either, in the proper sense of the word. The largest buildings, not distinguishable from the others by their beauty, seem to have been shops or public offices, in fact always strictly practical buildings. Perhaps there was a temple on the hill where the Buddhist monastery stands today (whose bricks first put the archaeologists on the track of the discovery), but soundings and trenches have only brought to light brick platforms and hardly seem to confirm the presence of a sanctuary. The difficulty presented by the existence of a Buddhist *stupa* at this spot, which would have to be moved if the tumuli were to be completely cleared, has so far made it impossible to obtain any definite knowledge of the aspect of the Mohenjo-darians' temple.

But if they did not have temples, they did at least possess gods. However, just as the nature of the buildings in which the Mohenjo-darians worshipped and celebrated the ceremonies of their cult is unknown, so little enough has been discovered about the nature of their gods. All that is known has come from statuettes which were probably idols, from talismans and from seals found in the ruins, bearing symbols which were certainly of religious origin and ritual significance.

Large numbers of these seals have been found in Mesopotamia, Syria and Cappadocia, and thus it would seem that they were in frequent use at this period. They served to authenticate the objects sealed, but still more to place them under the protection of the being represented on the seal, whether god, spirit or demon. Sealing an amphora at that period was not only a means of preserving its contents against the greed of neighbours by asserting the laws of ownership. It condemned any foolhardy person who might break the seal, in order to appropriate the contents, to the wrath and vengeance of a supernatural guardian. Because of this, this type of seal always bears the name or picture of the divine or diabolic defender appointed to guard the object, rather than the name of its legitimate proprietor.

The Mohenjo-darian seals, like those of the Sumerians, Akkadians and Hittites, must be interpreted in this way, and we can regard the representations they bear as pictures of the gods.

The one that appears the most frequently is the "Horned God"; we can designate him in no other manner, as we have no idea what the Mohenjo-darians called him. He has a complicated hair-style, with two large horns, bracelets on his arms, and is shown full face, squatting on a sort of low throne. He is surrounded by animals and mainly flanked by an elephant, a tiger, a buffalo and a rhinoceros. It must be said at once that never has a rhinoceros been expressed in so powerful or striking a manner in any country at any period. The whole weight and ferocity of the animal, the very thickness of its skin, the speed of its walk are transmitted with surprising naturalism on to these small engravings on seals. It is also reproduced in statuettes, and here the horny texture of its skin is represented by bands of clay, which ingeniously imitate it. The Horned God

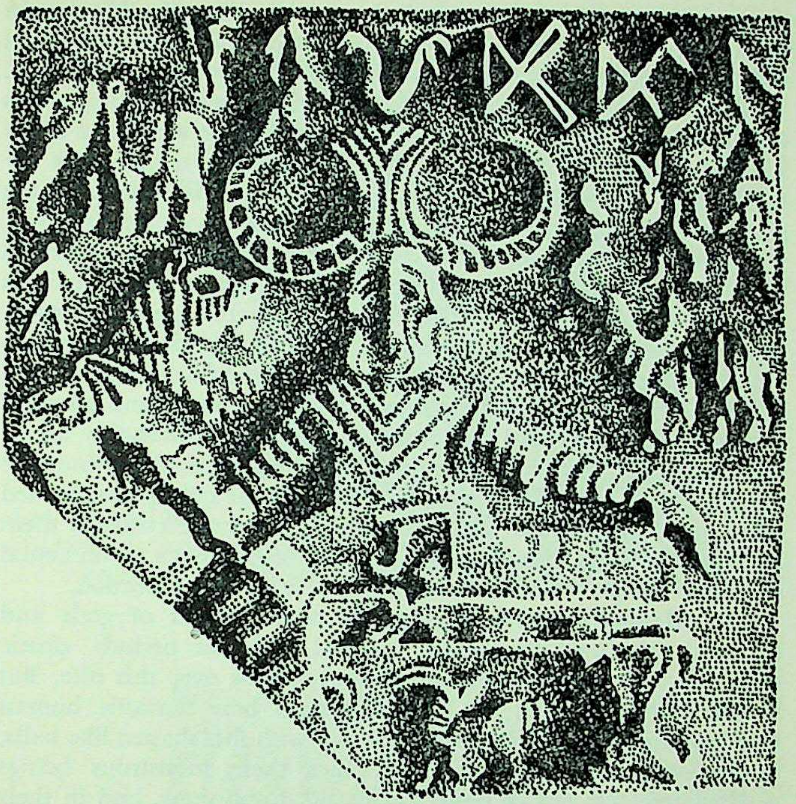

Fig. 13 The Horned God, seal from Mohenjo-daro

must have been one of the most important personalities in the Sindhi pantheon, and it is quite natural to recognize him as the prototype of the great Hindu god, Siva, in his particular avatar as God of the Animals Pasupati. This parallel, which has been drawn by Sir John Marshall, appears obvious. Siva is known to be one of the oldest divinities in India, one of the most popular and also with the most varied appearances because he had a thousand-and-eight names and probably as many varied personalities. In his original form, that of the god of fertility, it would be quite natural for Siva to have appeared in Indian religion at the beginnings of civilization. It is interesting to note that he has continued in existence for five thousand years under the same face given him by the ancient inhabitants of the Indus.

A horned goddess appears on other seals, also surrounded by animals. A particularly strange representation has her standing in a tree, which must be the *pipal*, a tree sacred to the Hindus. A personage with a tiara of horns kneels before her in a movement full of natural and religious fervour, followed by a sort of buffalo. A whole row of little figures, with pointed bonnets and long plaits on their heads, dressed in short robes, seem to file along the lower register of the seal. This religious scene must be regarded as the original of the devotion with which Hindus still surround the goddess Lakshmi, and the *pipal* which often serves as her dwelling.

This veneration of the *pipal* (modern Hindus still make offerings to it and decorate it with jewels and vases which are sometimes painted) certainly originated in the cult of sacred trees, practised, so the seals tell us, in the Indus valley during the third millennium B.C. The Mohenjo-darians probably had a special cult of several types of trees, as varied representations of them are found on seals.

The Mohenjo-darians also worshipped animals, probably above everything else. Buffaloes or bulls—tigers, elephants, and rhinoceros are associated, as we have already seen, with the cult of the Horned God, but they were also venerated for themselves. Pictures of them are found on seals which acted as amulets or talismans, or on actual seals, used to place the sealed object under divine protection.

The Mesopotamian seals show fantastic figures of gods and demons, appointed to protect the seal. In later periods, classic divinities with their traditional attributes, took over this rôle. But in the archaic period, the Sumerian seals bore fantastic human representations of massive, heavy beings, with fists shaped like balls, and enormous round feet. Sometimes these monstrous beings gesticulated in a sort of dance or fearful dumb-show, and in their incomplete, embryo state they are more terrible than the most minutely depicted demons.

In the dead towns of the Indus, the seals mainly bear naturalistic representations of animals. There are few composite monsters, such as those found in Mesopotamia. These animals, mainly tigers, serpents and bulls, are engraved with exquisite art and with a precise and delicate technique. The tiger is one of the favourite subjects of the seal engraver, who conveyed the feline tread and the supple walk with a surprising truth. The tiger may not have been worshipped for itself alone but only as an animal associated with a goddess, who can be called the Tiger-Goddess, for she sometimes appears in the form of a tiger with the head of a woman. Even today, the goddess Durga, goddess of death and destruction, is mounted on a tiger and it is easy to recognize the Tiger-Goddess of former times, where the two natures, animal and divine, combined in a mixed figure of woman and beast, in the present representation, which separates the goddess from her mount and makes them into two distinct beings.

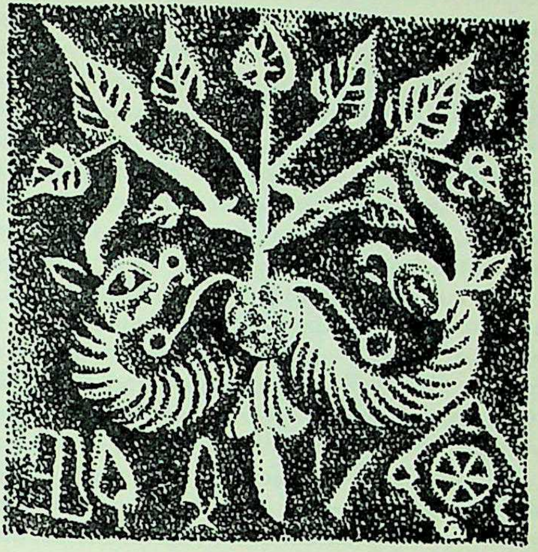

Fig. 14 Pipal tree, seal from Mohenjo-daro

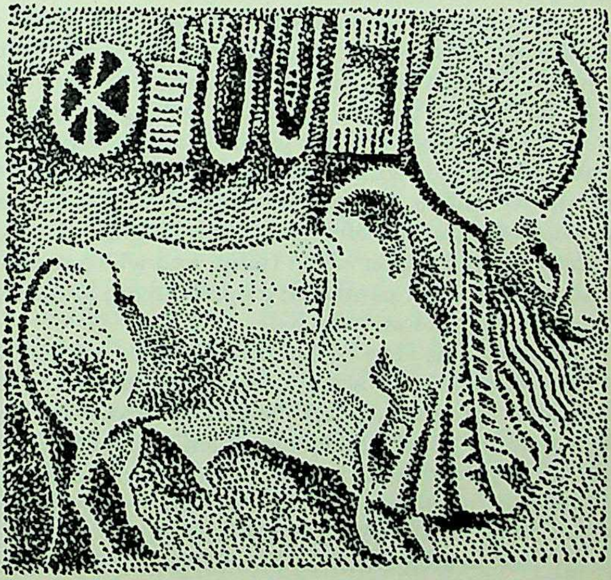

Fig. 15 Zebu, seal from Mohenjo-daro

The cult of the serpent appeared at the dawn of all religions. The serpent is considered the representative of chthonian powers. It is the inhabitant of dark, damp, subterranean places. Crete, Cyprus and Mesopotamia all boasted temples where sacred serpents were kept and cared for. The cult of the serpent is, in most cases, associated with the cult of the bull, itself a solar animal, the animal of the resurrection, a celestial animal. The symbol of the bull bitten by the serpent, found in the religion of Mithras, has therefore a particularly interesting significance when the association between the infernal, tellural, chthonian divinity on the one hand and the celestial, living and fertilizing divinity on the other is understood.

The cult of the serpent was practised in the Indus as it was by the antique peoples of the Mediterranean basin. It is the typical serpent of India, a cobra with its hood spread out wide, receiving offerings of milk. The serpent dwellings found at Khafaje, comprising clay tubes where the reptiles lived and a whole assortment of cups and vases in which their food was placed, must be remembered here.

But the cult of the serpent only appeared exceptionally on the seals at Mohenjo-daro, while the cult of the bull inspired very numerous representations on engraved seals, and also in the form of statuettes and even toys—the bull with the movable head, pulled by a string, was obviously a toy. As in all countries at all times, the bull who is here the aurochs or *bos primigenius*, is associated with fertility and resurrection rites; this is also the meaning of the phallic cult of the *lingam*, found in the religious customs of the Mohenjo-darians. A bull or buffalo is frequently represented in a sort of stable which looks more like a temple, opposite a feeding-trough. It is interesting to note that a seal with this picture was recently found in Mesopotamia, obviously originating from the Indus, as neither the Sumerians nor the Akkadians ever practised a similar cult. On the other hand, Mohenjo-darian seals sometimes show a figure which did not belong directly to the religion of the Indus, and which seems to have come from the Sumerian pantheon: a horned man, attacking and binding a monster in the form of a bull.

Other than the Horned God and Horned Goddess, the inhabitants of the Indus do not seem to have worshipped anthropomorphic divinities. It is claimed that the famous steatite statuette is of a god. This may be possible, and the trefoil motif which covers the robe can be regarded as a religious motif. But no religious character whatsoever animates the figure, with its complicated headdress which is executed with intense and direct realism. No religious image can be seen either in that copper statuette of a nude young girl, so audaciously and frankly naturalistic (Fig. 16). On the other hand, most of the clay statuettes represent either the Horned God

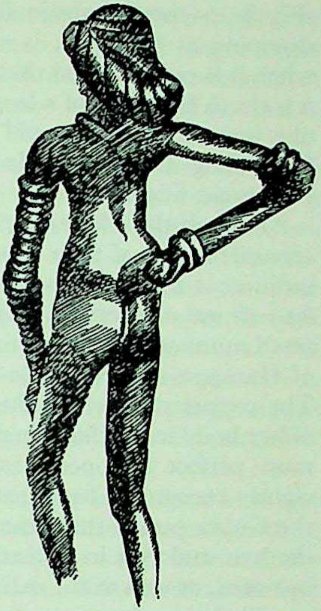

Fig. 16 Nude girl or dancer, copper statuette

or the Mother-Goddess with heavy jewels and complicated head-dress.

The seals and the clay statuettes are at the moment our only known source of information on religion here. The art, however, is better known, although the absence of tombs in the Indus valley means that there are also no funeral furnishings, elsewhere such a valuable guide to the customs and habits of the living. The seals are present in fairly large numbers. In stone or clay, carved with exquisite art by engravers equipped with only the most rudimentary tools, they testify to the excellence of aesthetic sensibility and taste in the Indus Valley five thousand years ago. In fact animal art in Mohenjo-daro reached a degree of perfection which it has rarely met with elsewhere. In statuary also, there are figurines of bulls, rendered with brief and concentrated violence, monkeys full of malicious refinement, earthenware dogs which, to use a well-worn phrase, do everything but speak.[1] "Some of the animals on the larger and finer seals are beautifully portrayed, and though their conventional attitudes provide little scope for the expression of movement, much care was lavished on the modelling. A specimen bearing the figure of a humped, or Brahmani, bull is a very good example of the fine work that could be produced. The muscles ripple under the skin in a most realistic fashion, and the well-nourished hump, drooping at the back, is also extremely well engraved, especially when it is remembered that all the work had to be done on so small a scale. A fragment of a larger seal with just the head and shoulders of a tiger is also a splendid piece of work, the open mouth, tongue, bared fangs and careful placing of the double stripes being indicated with great fidelity."

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[1] Mackay, *op. cit.*, p. 165.

Although the Mohenjo-darians were uninterested in the external ornamentation of their houses, this does not mean that they were indifferent to art. Quite the contrary. They probably reserved art for cultural or everyday objects, and those that have been found, in small numbers, of course, in relation to the extent of the great towns of Harappa and Mohenjo-daro, testify to a highly developed art. The copper statuette of the young girl, so evocative of the slimness of her body in its charmingly natural attitude, is on a level with the most perfect European and African bronzes. Sir John Marshall rightly recognizes here features which characterized Hindu art of the Gupta period three thousand years later. The fine treatment of the hair and eyes in a steatite statuette of a bearded man must also be noted, as well as the delicacy of the pottery figurines where hand-moulded clay shapes applied to suggest the features of the face and the detail of the costume produce an extraordinarily life-like effect.

The ancient inhabitants of the Indus also excelled in the art of jewellery. Necklaces have been found, notably some which were contained in a silver vase, where the art of the goldsmith is magnificently displayed. The Mohenjo-darians knew how to work skilfully with metals—gold, silver, copper and bronze—and these seem to have been known since the dawn of the Indus civilization, that is to say, somewhere about 3000 B.C. By intensive trading, they were able to obtain the metals they required: tin from Burma or Bombay, copper from Rajputana or Baluchistan, perhaps even from the mines of Oman, whence the Sumerians also drew their stocks.

They used them to manufacture arms, agricultural and industrial tools, ornaments and statuettes. They were able to cut hard stones, from which they made necklaces, belts of rows of cornelians, agate and jasper pendants, bracelets from jadeite which probably originated from Tibet. Specimens of all the semi-precious stones have been found among the "treasures" of Mohenjo-daro and these were either local or imported, often from great distances. There are also a fair number of rings, nose ornaments, bracelets and ear-rings.

The artists of the Indus also produced perfect work in the sphere of ceramics. This branch of their activity is particularly interesting, as it is here that it shows most affinities with the art of Mesopotamia and Elam. The pottery that has been found at Mohenjo-daro, Harappa and Chanhu-daro has a uniform character which, despite some variants, due principally to difference of period (three stages of culture have been found at Mohenjo-daro and more still at Chanhu-daro) make it possible to designate it generally as "Indus ceramics."

These ceramics are distinguishable both by their material and their decoration. They are made of fairly fine clay, worked on a wheel and fired in a kiln. Some of these kilns have been found; they are of quite large dimensions and heated by wood fires. But the Indus ceramics are remarkable more than anything else for their decoration. When the vase had been modelled it was covered with glaze to fill up the pores and to make the vase waterproof, as well as to give it that beautiful rose colour which takes on almost the consistency and varnish of lacquer after firing. This colour results from the use of ochre clay, probably brought from Ormuz, as it still is today.

The motifs characteristic of Indus ceramics were traced on this ochre base with a brush, notably that strange, monotonous motif of intersecting circles. These generally covered the whole surface of the vase like a sort of wide-meshed coat of mail. This decoration also suggests netting, and it may be wondered whether it originated in the net in which the containers were carried. Some steatite vases also show decoration in relief, reminiscent of basket-work.

The most interesting themes of Indus pottery, however, are borrowed from the vegetable or animal world. Several geometric motifs are known, especially that which alternated black and red triangles to obtain quite curious effects. The black colouring, which was applied to the ochre glaze before firing, was probably obtained from manganiferous haematite present in the clay. Geometric decorations in the Indus do not possess the prodigiously rich inventiveness found in Mesopotamia or Elam. As at Susa, a sort of comb appears frequently but it is difficult to establish here, as at Elam, whether this comb is the stylization of the long-haired goat.

On the other hand, the tree is a much-used theme, perhaps because trees have always been specially venerated in Indian religions. It is instructive to follow the modifications of this theme from its naturalistic expression to the period of its most fantastic variations, when stylization deformed the original tree until only the trunk remained, represented by a vertical line, or where the branches were reduced to horizontal lines. The animal motifs are still more interesting. We have already noted the perfection that the Indus artists attained in their representations in relief on seal engravings of buffaloes, tigers, elephants and rhinoceroses. It must first be noted that these animals are not found represented on vases, as if the different purpose of seals and of pottery demanded a different decoration. Religious figures or at least figures associated with religious ideas decorate the seals. The paintings on the vases, on the other hand, show other animals, whose significance is unknown. They may have had a purely ornamental purpose, although it is difficult to admit this, as arbitrary decoration was the prerogative of later periods.

The symbols engraved on the seals have been interpreted by analogy with the present religions of India, which have certainly preserved the traditions of the primitive religion of the Indus. It is more difficult to interpret the animals on the vases: ibexes, antelopes, birds, serpents or fish. But these same animals form the decorative vocabulary of Elamite pottery. The analogies between Indus ceramics and those of Susa depend to a large extent on the use of the same animals as decorative motifs. In the present state of knowledge, the symbols these animals represent are unknown. To discover this, the mythology of these races must be more deeply analysed. In the absence of texts, we are reduced to conjecture.

Certain specimens also exist of polychrome ceramics, obviously rarer than those with black designs on a red base, and these show clear differences both in technique and aesthetics. "Small vessels", Mackay writes, "painted in polychrome occasionally come to light, but the colours used—red, black, green, and very rarely, yellow—are, with the exception of the first two, very friable, and they were undoubtedly applied after the jar was baked. This kind of decoration occurs most often on a white slip, but sometimes white is used as a separate colour and the whole design is painted on the natural surface of the ware. Polychrome pottery is, however, very rare, and apart from two badly damaged vessels, the specimens recovered are all in the form of small sherds, while the only devices now extant are the intersecting circle, the trefoil, and one or two plant designs, none of which resembles in any way the polychrome designs on the pottery of Elam or Sumer."[1]

The polychrome ceramics do not resemble either in technique or decoration those of Susa or Mesopotamia (which are easily recognizable in the red pottery with black design) and may have preceded them. It may be wondered whether, even before the civilizations of Harappa and Mohenjo-daro—in other words, the Indus civilization—whose relations with Persia and Mesopotamia are abundantly proved, there did not exist still earlier cultures, connected more closely with Baluchistan.

Polychrome ceramics have been found in the main on sites other than Mohenjo-daro and Harappa, originally thought to be the only

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[1] *Op. cit.*, p. 147.

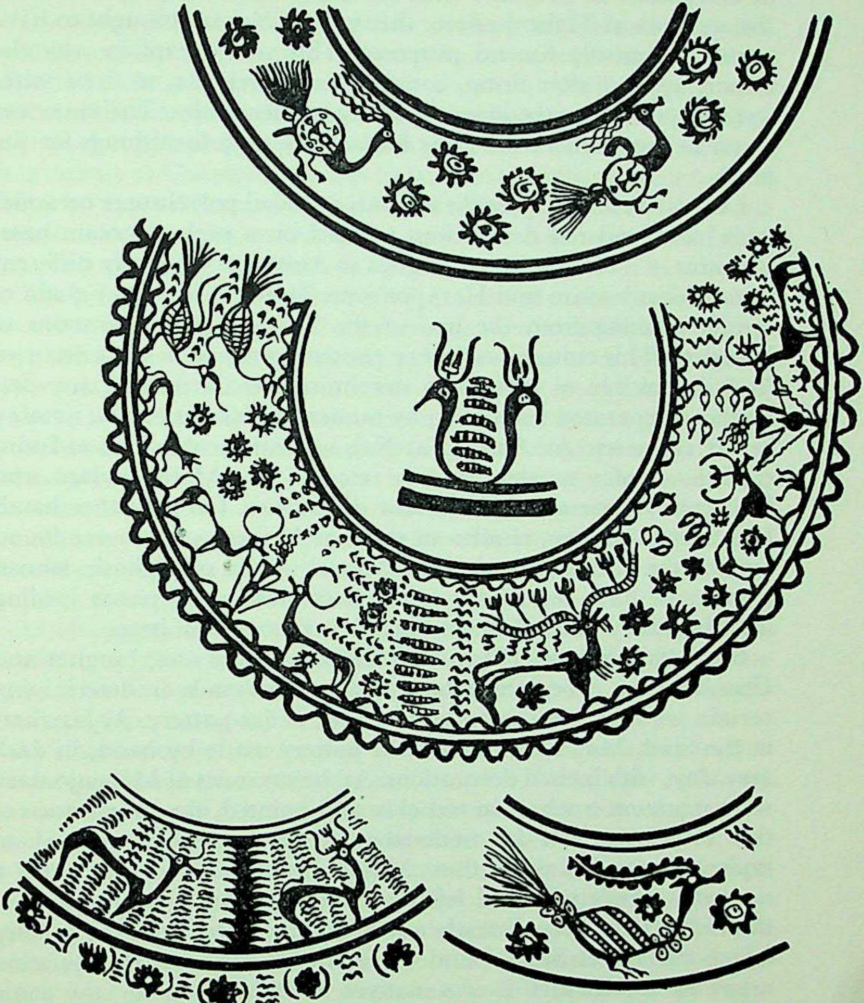


Fig. 17 Decoration on the vases found at the cemetery at Harappa

representatives of the Indus civilization. Since their discovery many other remains have been brought to light, notably at Nal in Baluchistan. Hargreaves found polychrome ceramics here, which he considered to be earlier than the Indus ceramics proper. Unlike the ceramics at Mohenjo-daro, the vases at Nal are thought to have served exclusively funeral purposes. This would explain why the colour, applied after firing, could be more delicate, as these vases were not for use by the living for everyday necessities. The same was found at Susa, where the vases found were only furnishings for the dead.

Excavations by Majumdar at Amri revealed polychrome ceramics with black and red decorations painted on a pink or cream base. Remains of a civilization analogous to Amri and distinctly different from Mohenjo-daro and Harappa were found in the great chain of tumuli running from the bed of the Indus to the mountains of Khirthar. This culture, earlier or contemporary with the other two (it is impossible at present to determine the dates with any certainty) is separated from them by numerous characteristics, notably by its ceramics. At Amri as at Nal, we can speak of a non-Indus culture—insofar as that title is reserved for Mohenjo-daro and Harappa. Rupar also held similar discoveries. On the other hand, fragments of pottery similar to those at Mohenjo-daro were found among the fortifications of Ali-Murad. Built of gigantic stones, these must have served the function of closing the passes leading into the valley of the Indus to invaders from Baluchistan.

Since the discovery of two magnificently fertile sites, Janghar and Chanhu-daro, a beginning has already been made in determining certain sequences in the evolution of the Indus pottery. At Janghar, in the Sind, Majumdar discovered pottery made by hand, in dark grey clay, with incised decorations. As the ceramics at Mohenjo-daro were made on a wheel in red clay and painted, the importance of this revelation can be understood. These ceramics seemed so typically non-Indusian that Majumdar attributed them to a nomadic people who had left no other traces in the country than this different pottery. But when they are compared with the pottery which Sir Aurel Stein found in South Baluchistan, the question arises as to whether it was natives of Baluchistan or the same nomads traversing that country also who left these characteristic traces of their passage.

Discoveries at Jukhar near Larkana produced yet another type of polychrome pottery. This has geometric designs or abstract motifs—possibly stylizations of trees and plants may be discerned. It is also distinguishable by its colouring—designs in dark purple, verging on brown or black, on a cream or pink background. These designs are generally bounded by red bands or framed in a way often reminiscent of the Metope style. Other vases show red and black designs in herring-bone pattern, on a cream base. Sir Aurel Stein found similar vases at Zayak in Baluchistan.

There was no means of dating these Janghar and Jukhar ceramics, even in relation to Mohenjo-daro, until chance led to the discovery of similar pottery in a new site, that of Chanhu-daro. Here important ruins testified to the existence of a great capital, probably as extensive as Harappa and Mohenjo-daro. The most important result of excavations at Chanhu-daro was to demonstrate the sequence of the different types of ceramics just described. Here they were all gathered in one spot, where previously they had only been found scattered over different sites.

The primary factor in all study of antique civilizations is that of the succession of cultures. The enormous advantage in sites which have been inhabited over a long period is that they present successive layers of débris placed one above the other in artificial hillocks called tells. Sometimes, a dozen or even a score of towns lie one above the other in these monticules, and the separation of the débris progressively reveals, layer by layer, down to the virgin soil, the various stages of civilization which have succeeded each other on the site. Apart from specific upheavals or earlier excavations clumsily undertaken, it is obvious that the lowest layers are the most ancient, the highest the most recent.

At Harappa, the upheaval of the ground resulted in pieces of modern money being discovered in lower layers than Sumerian seals. This brings home the need to use a certain scepticism in evaluating the data supplied by stratigraphy.

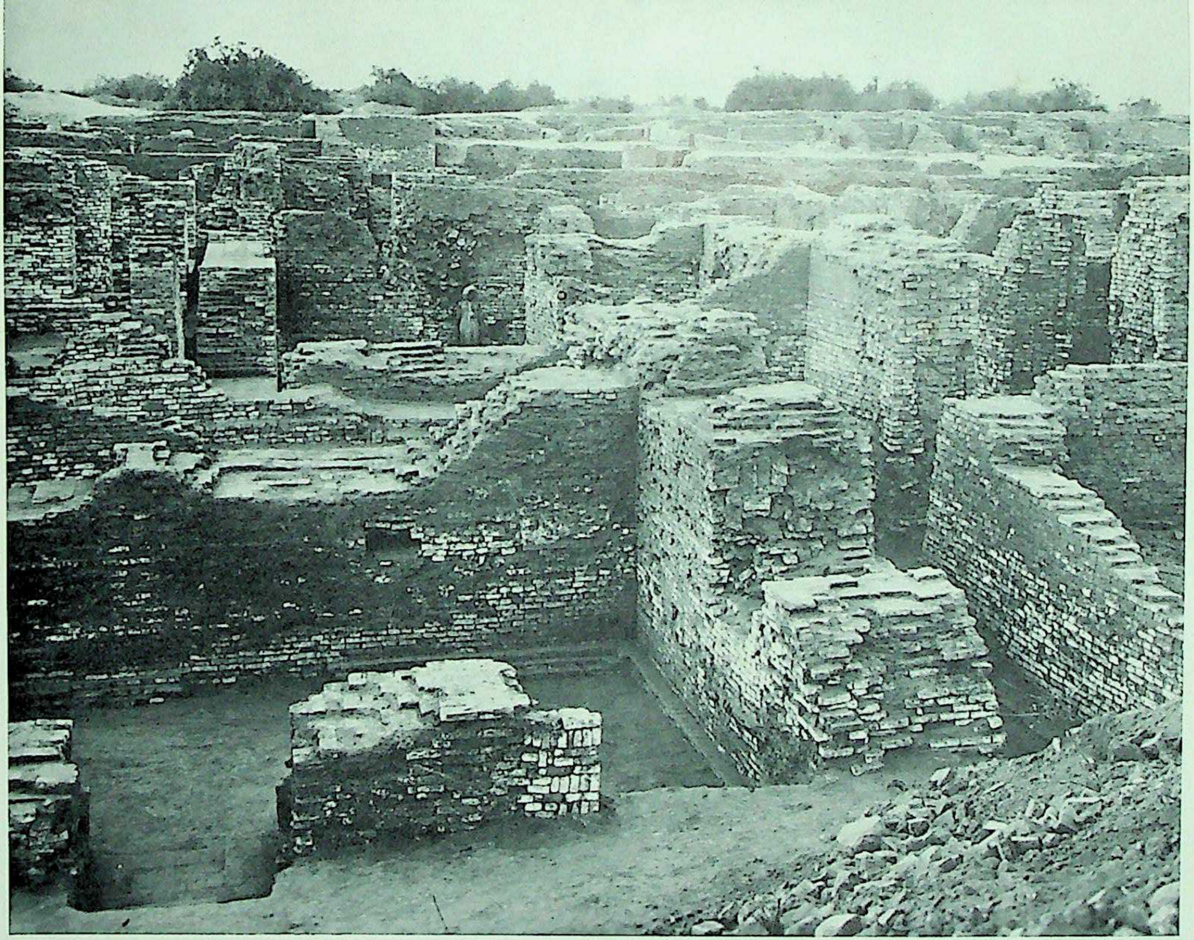
At Chanhu-daro, the order of succession of the strata was intact. There was therefore no difficulty in lifting the débris layer by layer, and in each layer of débris different specimens of pottery were found, including some of the Janghar and Jukhar type.

Excavations at Chanhu-daro are not finished. Much remains to be cleared, much to be discovered. The lower part of the largest tumulus has not yet been completely separated, and the adjacent tumulus remains intact. Chanhu-daro did not possess fortifications, which leads to the belief that these were pacific people, or perhaps that they had nothing to fear from their neighbours. Their most fearful enemy was the Indus, which now flows over ten miles away. But in the very ancient times when Chanhu-daro flourished, it passed very close to the town, so near that a more serious flood than usual was enough to make the inhabitants flee and return later when the river had peaceably regained its habitual bed. The different occupations of the site are explained by the intervals when the river rendered the town uninhabitable. It was not until the river had fallen—perhaps after several centuries—that new inhabitants came to establish themselves at the same place. It had certainly suffered frequent invasions from its neighbours, the turbulent highlanders of Baluchistan, but it was probably the movement of the Indus, i.e., unusually heavy flooding arising from excessive rain or melting snows, which caused the spot to be abandoned.

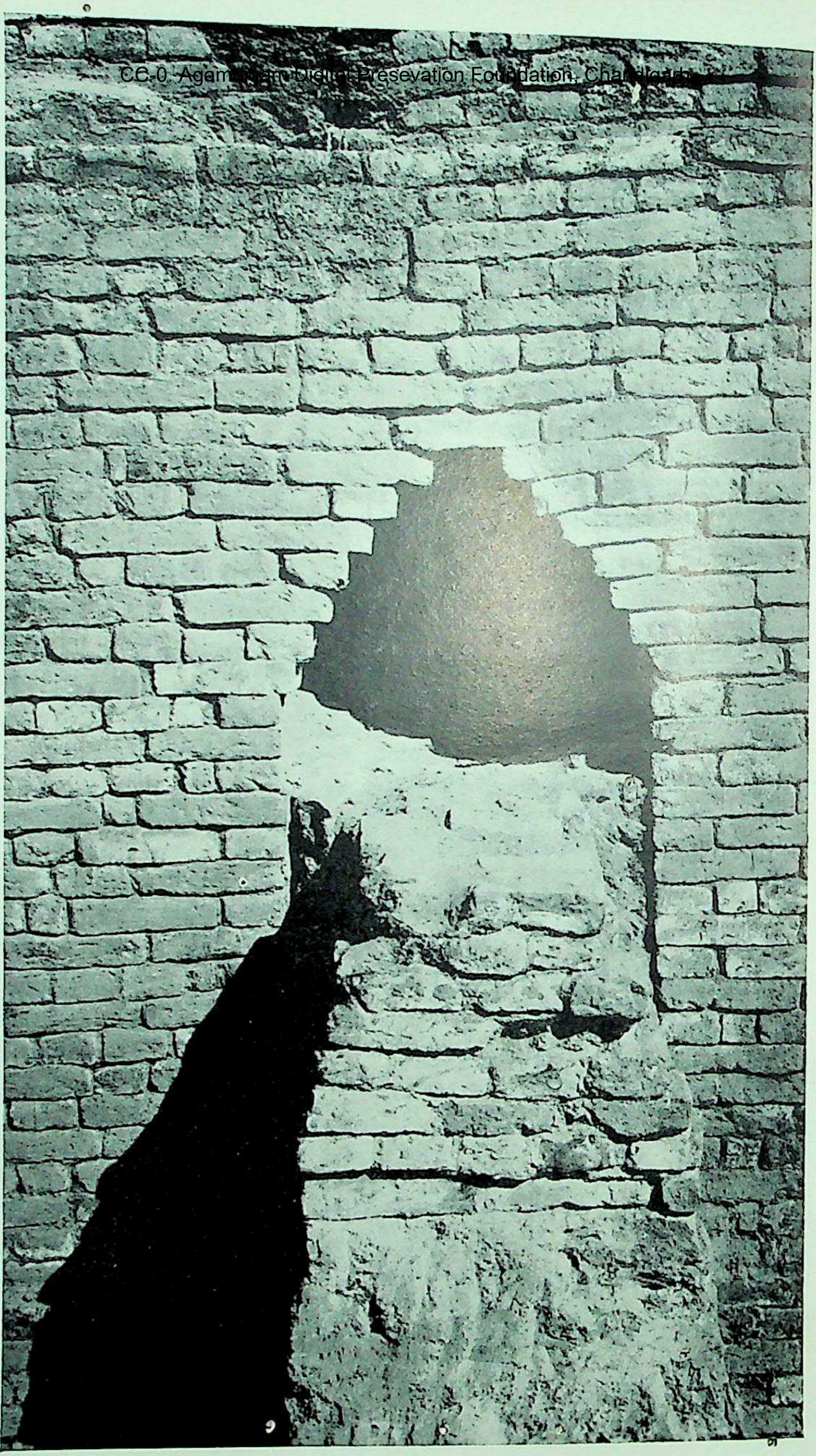
Of the four layers of culture found at Chanhu-daro, the two lowest show a degree of civilization analogous to that observed at Harappa, the civilization designated Mohenjo-darian. This must have been a great metallurgical centre, judging by the abundance of metal objects discovered in the two Mohenjo-darian strata and the excellent quality of the different tools and vases in bronze and copper. Typically Harappian fragments of pottery, with peacocks, fishes and ibexes, closely connect this stage of civilization with that which characterized the flowering of Mohenjo-daro and Harappa. A curious statuette of the Mother-Goddess also dates back to this period, and has the same characteristics as the clay figurines examined earlier.

Above these two layers, a new stratum appears. This is distinguished by the presence of polychrome pottery, painted in black and red on a cream or rose base and completely different from that used earlier—so different that it cannot be connected with anything found previously in the Indus valley. Its equivalent can be found in the vases discovered by Frankfort at Tell Halaf or the Chagar Bazar pottery in Syria. Abstract or geometric decoration and stylization of foliage replace the naturalistic representations typical of the preceding period. The seals also do not resemble those used before. They too show a tendency to stylization. They no longer represent the animals which figure on the Mohenjo-daro and Harappa seals—the tigers, wild ox, elephants and rhinoceroses—but principally antelopes, treated somewhat in the style of the Elamites. And again the decorations on the round seals (no longer square or rectangular) are reminiscent of Elam with their patterns of stars and rosettes, obviously Persian in type, or even interlaced plaits, later so frequent in Irish art.

All this is different from the productions of the preceding period, but precisely similar to the findings at Jukhar, near Larkana, in Central Sind. The technique and styles representative of this Jukharian civilization were thus present at Chanhu-daro, after the site had been abandoned by its inhabitants for some unknown reason. In actual fact, it would not appear that the newcomers used any violence to expel the original occupants of the territory. The Indus must have moved in between the two. The Jukharians



Ruins of Mohenjo-daro



Arch at Mohenjo-daro

could not have stayed long at Chanhu-daro. A new flooding of the Indus which divided the town into three parts (easily observed from an examination of the site) provoked the departure of the race.

A sort of head-rest in ceramic is amongst the curious remains of the Jukharian occupation. This is red, decorated with a purple design and hollowed out in triangular grooves; it is not known whether these had some practical utility or served a purely decorative purpose. Near this, the first lipstick known to antiquity was found in the shape of a rectangular piece of red ochre, which elegant woman at this remote time already used to enhance the natural colour of lips and cheek. This stick, one end of which is worn—to whose lips was it last applied five thousand years ago?—lay on a small low table beside vases of kohl, flasks of perfume, hairpins and bronze razors.

It must be mentioned at this point that cosmetics were not only, and probably not originally, used for aesthetic purposes. They derived from the custom of tattooing which served magical or religious ends rather than a simple desire for beautifying. Cosmetics also had a therapeutic use. Eyes were smeared with kohl or malachite to avoid ophthalmia, always widespread in the East. On the other hand, the very widespread use of malachite as make-up during the whole of Persian, Egyptian and Mesopotamian antiquity has led Donald Mackenzie to suppose that, apart from its medicinal qualities, this green-coloured earth was thought to possess a magical invigorating virtue.

Above the layer corresponding to the Jukharian occupation, the ruins of Chanhu-daro offer lastly—it might be better to say firstly—because this was the first layer to meet the eyes of the archaeologists—pottery typical of Janghar. These were ceramics in grey clay (not pink or cream like the Jukharian nor red as the Harappian), incised (and no longer painted), so different in character from their predecessors that one hesitates to attribute them to a people originating in the Indus. These fragments of vases may have been abandoned by a nomad people staying for a time at Chanhu-daro, living on the ruins of the preceding occupants. They would not necessarily have left any other traces of their stay except this grey pottery. Undoubtedly at Janghar in the Sind, where much more extensive remains of this civilization have been discovered, these occupants were not autochthonous but travellers, perhaps a wandering tribe or an unknown race of invaders.

Our knowledge of Chanhu-daro, whose ruins have still been only very incompletely examined, reveals for the first time a sequence determined by four successive occupations, the two oldest belonging to the culture of Harappa and Mohenjo-daro, the third to the culture of Jukhar, and the fourth to the culture of Janghar. Here at last are the beginnings of a chronology of the Indus civilization.

The question very naturally arises as to whether the various occupants of the Indus Valley belonged to the same race, and, if so, which race? It can only be definitely asserted that they were not Aryans, as these only descended into the Indus at a later date. Their gods were not Aryan gods. There are still many unresolved mysteries in India; the megaliths, for example, found in large numbers in certain regions—not in the Indus Valley—and which are probably connected with the great enigmatic civilization of the megalithic period. The problem of the cave-paintings in the mountains of the Mahadeo is also completely insoluble. No attempt to resolve it can be made without comparing them with rupestral paintings and engravings in America, Australia and Africa; this is one of the strangest and most fascinating domains of archaeology. As well as a collective megalithic civilization, was there also a collective petroglyphic civilization, found at Negrohuaico and Machu Pichu, in Rhodesia and the Sahara, in Brazil and North America—ignoring for the moment the Scandinavian *hallringars* and the various forms of European petroglyphs? The Hindu paleolithic period studied by Bruce Foote[1] in its microlithic aspects, analogous to the microlithics of Africa or Palestine has also many unknown features.

The works of V. D. Krishnaswamy give a fairly exhaustive study of the stone age in India[2] and show that a parallel and contemporary development in the various paleolithic, mesolithic and neolithic stages existed in India, Europe and Africa.

All the techniques met with in these countries are found almost complete on the various terraces formed by the great Hindu rivers which, here as elsewhere, have provided the most abundant sets of tools.

The racial problem of the population of the Indus Valley is even more difficult to solve as few cemeteries have been found. What did these people do with their dead? Normally, even incineration leaves traces, and the burial of the ashes requires the use of certain funeral furnishings. The scarcity of tombs would appear to indicate that the Hindus of the third millennium B.C. burnt their dead and then threw the ashes into the river—as Hindus today still do. There must have been ghats on the banks of the Indus (as today on the shores of the Ganges) where the corpses of the dead burnt on the funeral pyre.

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[1] *Indian Prehistoric and Protohistoric Antiquities*, Madras, 1946.

[2] *Stone Age in India*, "*Antient India*", 1947. See also *Prehistoric Exploration in India*, "*India Historical Quarterly*", 1948.

Documents found in the cemeteries at Harappa, particularly Cemetery H and Cemetery R.37, are very much more precious for being so exceptional. They establish certain very curious resemblances between burial processes in the Indus and Mesopotamia. As at Sumer, the corpses were buried, stretched out to the full, their heads turned to the north. Some remains of reed coffins have been found, such as those used at Sumer in the third millennium. Bones belonging to small quadrupeds, birds and fishes were found beside these human bones, as well as a lot of pottery and a large number of small terra cotta figurines.

A custom which does not require funeral furnishings—and the priceless ethnographic document of an intact skeleton—can only be regretted. This applies also to the absence of inscriptions, which has meant that the language of the inhabitants is unknown. The characters on the seals show that their writing was pictographic but these pictograms belong to a very special species and remain unintelligible. They are completely different from the dictograms found in the beginnings of Chinese or Egyptian writing, for example. The only inscriptions which are analogous to the inscriptions on the Indus seals lie at a site which is and which will probably remain one of the most mysterious—Easter Island. Here monstrous idols with short arms and low foreheads, sometimes wearing ridiculous hats, contemplate the infinity of the sea with empty eyes. On Easter Island, amidst all its enigmas, an unknown race has left enormous statues and strange wooden sculptures representing thin, bent old men with pointed beards and Satanic smiles. Inscriptions have been discovered here with characters which appear similar to those of the Indus. In these two places, so far apart, and *nowhere else* can the same writing be found.

A theory on this subject which de Hevesy propounded to the *Société préhistorique française* in June 1933 aroused great interest in the academic world. Lively discussions began on the assertion that the invaders who according to native tradition came from the west nine hundred years ago, brought a writing originating in south-eastern Asia, judging by its pictures of animals which were unknown in Polynesia—monkeys, elephants, etc. . . . In de Hevesy's view this writing was the ancestor of all known writings, including Chinese. "This no doubt is going too far," concludes James G. Février.[1] "It is none the less certain that some resemblance does exist: in particular, in both cases, figures of men have been found, their limbs wide apart, sometimes holding an instrument or sometimes a weapon. Are these similarities decisive? Without following de Hevesy to his final conclusions, it may be admitted as a research hypothesis that they point towards a certain community of origin, however remote, between proto-Indian writing and that of Easter Island."

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[1] *Histoire de l'Ecriture*, Paris, Payot, 1948. See also the articles by de Hevesy in the *Bulletin des Amis de l'Orient*, 1938, and *Anthropos*, 1938.

However, to pursue these deductions is too seductive to the imagination and of doubtful scientific value. It is safer to record the fact without trying to explain it, and return to Mohenjo-daro to examine those rare skeletons which have been found. In 1925 and 1926, Vats and Hargreaves were fortunate enough to exhume several corpses from the ruins of a house. The convulsive and painful positions they were found in showed that they had died a violent death. There was a group of fourteen of these skeletons in one room, and another group of six in a road, some of which are decapitated. The most moving is undoubtedly that of a woman who had fallen head first down a stairway which led to a well below the street.

Mr. Wheeler found a group of skeletons of men, women and children in the ruins of the citadel, exhumed in 1946, probably belonging to the same family. This was probably a family of ivory sculptors, because two elephant tusks were discovered near the corpses. The man had carried them away in his flight, at a time when the population was fleeing to escape the assault of the Aryan invaders. After the fall of the citadel, the invaders stripped the fugitives of all their possessions and killed them, but they left the tusks behind.

In 1946 Wheeler continued the clearance of the extensive ruins at Harappa and revealed the ramparts of the town. These were as extensive as those of Mohenjo-daro, and, like them, were composed of a sort of framework which assured solidity, in a country where stone was very rare and where constructions were made exclusively of brick or *pisé* (clay stiffened with gravel). Today we have a very clear and very complete plan of these fortifications. Their examination reveals that they were the means whereby these towns of the Indus hoped to defend themselves against invasion from powerful enemies, perhaps the Aryans. It is in fact possible that it was an Aryan invasion which destroyed the vast and powerful cities. Not far from this citadel of Harappa, Mr. Wheeler discovered the cemetery, mentioned earlier. This was in quite good condition and has supplied precious material on the burial methods of the Harappians. The corpses, enveloped in a sort of reed shroud were placed in a wooden coffin, together with beautifully executed funeral vessels, notably bowls, analogous to those found in Mesopotamia. The decoration of pottery, the vegetable and animal motifs in particular, show a richness of invention and imagination superior to any seen in the Indus valley before.

While on the subject of tombs, though far from the Indus valley, mention must be made of the extraordinary cemetery discovered in 1947 in the State of Mysore, near Brahmagiri. Active excavations disclosed a large quantity of Megalithic tombs, analogous to those found in North Africa, in the Caucasus and in different "Cyclopean" sites of Europe. Near the ruins of an important town, which was perhaps Isila, mentioned in the decree of Asoka, an extensive cemetery was brought to light, the tombs of which have curious features. They consist of a funeral chamber surrounded by numerous concentric circles of upright stones, broken stones and blocks of all shapes. Photographed vertically after the exterior covering and roof had been cleared, these tombs, of which several hundred exist, strangely recall the design of a flower, with the sepulchral chamber as the calyx and the exterior wall as the petals.

This hypogeum probably goes back to the third century B.C. and several curious details can be noticed there. The funeral chamber was enclosed by four stones, before the installation of the corpse and its funeral furnishings. The bones and the offerings were put in after the tomb was finished through a sort of port-hole in one of the stones. Why was this precaution taken? Was this a means to render the tomb inviolable or to prevent a vampire escaping? It may quite simply have been a means of making it easier to put new corpses in. In fact, the human remains found there were the result of second degree burial, i.e., they had already been dismembered, dried and cleaned by birds of prey, as is still the custom among the Parsees today, before being buried. Some tombs only contain incomplete skeletons, while elsewhere, they hold a confused mass of bones pushed through the port-hole, which was then closed by a stone plaque serving as a shutter. It is to be hoped that further excavation in the various regions of India will show whether this custom was fairly general or whether it was localized in that region of Brahmagiri.

To what race do the skeletons at Harappa belong? "Colonel Sewell and Dr. Guha", replies Mackay,[1] "have identified no less than four different races: the proto-Australoid, Mediterranean, Mongolian and Alpine, although the latter two are represented by only one skull of each type. The proto-Australoid and Mediterranean types, which form the majority of the specimens discovered, must have belonged to a big-brained, dolichocephalic people, and they agree in many ways with skulls found by Dr. Woolley at Al'Ubard and by the writer at Kish.

"The finding of the single Mongoloid skull is distinctly interesting when considered in relation to the discovery of several terra cotta figurines, some with horns which are definitely Mongolian in appearance and facially quite unlike the ordinary specimens. These were unearthed at a very low level of the city and suggest that there may have been a Mongolian strain among the people, possibly introduced by immigrants from the north-west—perhaps from the Iranian highlands, where a number of Mongoloid skulls of very early date have come to light during the excavations at Tepe Hissar in Damghan."

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[1] *Op. cit.*, pp. 200–201.

It would be going too far to deduce the existence of a Mongol race in the Indus valley from the presence of a single skull. What is known of commercial activity at Mohenjo-daro proves that all types of men must have met there, camel-drivers from the caravans and sailors from the boats which anchored at the ports as they sailed down the Indus. Very odd deductions regarding the autochthonous population could be drawn from examination of corpses originating from the hospital of a great maritime port where all races lie side by side. There must have been a similar situation at this town where merchants from Central Asia met those from Mysore, where proud Afghans may have rubbed shoulders with wide-nosed Sumerians and subtle Egyptians. It would not be surprising if there had been Mongols at Mohenjo-daro and perhaps even negroes. But the scarcity of skeletons and the variety of races to which they belong, still leaves this urgent question unanswered. All that can be said is that most of these corpses were of small stature and—here the architect confirms the data of the anthropologist—the houses were built for quite small men.

If the ethnic family to which these people of the Indus belonged is unknown, can any definite statement be made at least as to the origin of their civilization? It would be premature to advance anything but hypotheses. The Indus civilization is clearly of a specifically original type. But it is also certain that extensive artistic and commercial exchange strongly impregnated it with foreign influences, in the same way as the Indus, in turn, influenced the other countries with which it had relations.

It would be wrong to represent the inhabitants of the civilized world of the period as living in "splendid isolation", limited to their own customs and their own products. On the contrary, man has rarely travelled so much as at that intermediary period between the fourth and third millennium B.C. There has never been so great an exchange of raw materials, manufactured objects, works of art, gods and metaphysical ideas—so much so that instead of their being isolated centres of culture, deprived of any connection with the rest of the world at that time, there was a perpetual movement, from country to country, carrying all that could be carried. This is not really surprising. It can be established that the means of communication existing in the third millennium B.C. were not much different from those in use on the eve of the invention of the railway and the steamship. For nearly five thousand years, conditions remained absolutely the same. The representations of boats on the oldest Egyptian pottery from Nagada show vessels capable of making long crossings, of seeking gold in South Africa for example, or of weathering the Cape of Good Hope to discover the route to the Indies.

India has always been a powerful and fertile cross-roads of civilizations. Relations have long been known to exist between the Far Eastern peoples and the Roman Empire, whose inhabitants were designated as *Yavana* in Sanskrit texts. There had been occasional discoveries of objects of European origin in various sites in India, showing the existence of commercial relations between East and West. But it was only in 1945 that the discovery of a Roman villa in the neighbourhood of Pondicherry proved more conclusively the extent and frequency of these relations. Arikamedu was a veritable centre of foreign trade. Wheeler, Director-General of Archaeology in India, was first attracted by the discovery of fragments of red Roman pottery known as "aretine". The first excavation campaign, from April to June 1945, revealed the existence of a very extensive port, its docks, and its vats in which the principal export commodity was dyed, a commodity much appreciated by the Romans: muslin.

The locations of the ports extending from the Mediterranean to China are known from Ptolemy. Chinese historians tell of the Roman Ambassadors' visits to the Imperial Court, Marcus Aurelius and Antoninus Pius in particular. Antonine money has also been discovered in Indo-Chinese sites, which, such as Hoc-Eo, were large free ports of the same type as Arikamedu. Buchtal has perceived the influence of Greek and Roman money in modifying the type of Buddha in the art of Gandhara—and this presumes continuous and frequent exchange and not fortuitous and occasional encounters.

Certain Hindu texts also indicate that Roman artists and artisans came and took service with oriental sovereigns. One hears of carpenters, architects and masons who may have built palaces in Western fashion, large metal statues made by the *Yavanas* which would have served as candelabra. It must also be remembered that history—or legend—makes Saint Thomas, the apostle of the Indies, a carpenter in the service of a native monarch. The ancient map, known as Tabula Peutingerana, shows a place called the "Temple of Augustus" in a State of India which corresponds to the site at

Muziris. Present knowledge of the ruins of Arikamedu, as well as those of Muziris at Cranganore, proves that the Romans possessed important establishments in the town—on much the same scale as modern Europeans at Shanghai and Hong Kong. There must have been temples, theatres and public baths, as well as commercial establishments, warehouses, shops and studios. A stationary population must have lived there and for their entertainment troops of comedians mentioned in the Chinese chronicles were brought over from Europe, probably accompanying the official escort of the ambassadors.

Excavations at Arikamedu are still too recent to have yielded all their secrets. They are an immense field of investigation for the archaeologists and one that is full of promise—these Greek and Roman "banks" in the Far East. It is probable that one day soon all the stages noted by Ptolemy, all those points of the Greek *Periplus* will be clearly recognized, identified and examined. These commercial and aesthetic inter-relations may perhaps have created a sort of eclectic civilization where the West and Far East may, if not have mingled, at least have strongly inter-penetrated, had the barbarian invasions not overturned and paralysed peaceful trade and forced the great Chinese and Roman Empires to turn to military policies which left little room for free commerce and disinterested culture.

The relations which existed in ancient times between the peoples of the Indus basin and the civilizations of the Mediterranean basin are abundantly proved by discoveries on both sides. Excavations in 1937 revealed the presence at Khafaje of a Mohenjo-darian seal. In explorations during 1936–37 at Tell Agrab in Mesopotamia, Frankfort discovered vases showing a bull in his stable-temple, such as is so often represented on Indus seals. The vase is not of Indus manufacture but, as the cult of the bull was not in use in Mesopotamia, it is assumed that the local artist represented it on the vase as a sort of exotic oddity, doubtlessly coming from India.

There are also obvious inter-connections with Asia Minor. Resemblances, which cannot possibly be fortuitous, have been shown between Tell Halaf and the Jukhar civilization. Again, certain seals are too visibly related to the Cappadocian "cylinders" for direct influence to be denied. Connections with Elam are evident in the "double cross" motif found so frequently in Persia on certain seals. It may well be asked whether this motif originated there or whether it was born in India whence it finally reached the plains of Elam.

But it is the affinities with the Mesopotamian civilizations which particularly hold the attention of archaeologists. At Tell Asmar, for example, seals have been found bearing the motif of concentric squares, typical of the Indus; incrustations in bone are also common to Mohenjo-daro and Tell Asmar. Finally, on the latter site, Frankfort recently discovered a type of fairly rare ceramic so that the fact of meeting it both there and at Mohenjo-daro is all the more remarkable. It consisted of jars with knobs or buttons of a type identical at Mohenjo-daro and at Tell Asmar, which points to the same origin. But it is impossible to say whether the exporting country was Mesopotamia or the Indus Valley.

That the Indus towns sent their products far afield is sufficiently proved by the presence of a pearl in cornelian of Mohenjo-darian workmanship in the tombs of Ur. Examination of ceramics has demonstrated that exchanges were not purely commercial. They also influenced the respective aesthetic outlooks of the countries involved. Finally, there are the similarities between Sumerian sculpture and the steatite statue of a man, found at Mohenjo-daro, already mentioned. "The men", says Mackay,[1] "wore their hair in the same way, i.e. gathered up in a bun at the back of the head and secured by a silver or gold or woven fillet worn round the forehead; and on one supposedly portrait head from Mohenjo-daro, a pin is represented as stuck through the bun. On these statue heads the upper lip is shaved, a practice that was also common in Sumer."

These facts are of the greatest importance. It is not insignificant chance that the same type of shell-shaped seal exists at Kish and at Harappa, and that similar ones are found in Egypt and in the Sind. These probably served as spoons, and the fact that the Egyptians made them in slate and aragonite, the Indusians in copper and pottery is also important in its own sphere. This repeated evidence of intensive commerce between India and the Mediterranean basin indicates the composite and syncretic character of this civilization of the third millennium, based principally on commercial communications and artistic, industrial and religious changes.

The pottery of Baluchistan in particular, such as had been found in the region of Quetta, gives an excellent idea of the growing interrelationships at the beginning of the second millennium B.C., between Anau III and Western India after the fall of the Empire of Harappa. When that whole area of Afghanistan which stretches between Anau and Quetta has been explored and the intermediary stages found, we will possess definite data on the relations between Iran on the one hand and India on the other. Quetta is a particularly favourable site for research, as the ruins of the town are in a valley next to the Bolan Pass, which gives access to the Indus Valley through the mountains of Baluchistan. Two large natural roads also converge here, that of the south coming from Iran, that of the north following a course which later became that of the Silk Route. The Caucasus, Iran and India communicated along similar routes, which explains very clearly why pottery found at Quetta is similar to that manufactured at Anau in the fourth millennium and, at Nad-i-Ali ceramics analogous to those of Sialk.

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[1] *Op. cit.*, p. 197.

When Piggott's discoveries on sites at Baluchistan have been published in full and in their final state, and when a strict differentiation can be made by examination of ceramics between the civilizations of Nal, for example, and that of Quetta, we shall know more of this subject. The ceramics of Quetta are in fact distinguishable by their brown glaze and black painting, while those of Shahi-tump are grey and brown with black decoration and those of Kulli have black and red decoration.

Most of the sites of Baluchistan consist of villages established in the valleys; the inhabitants cultivated grain and reared animals. They hunted the ibex and the wild goat, and worked copper. The sites which promise the richest discoveries and have already supplied a great deal, are those of Sur Jangal, Rhana-ghundai, Mogul-ghundai and Periano-ghundai, in the north, where the characteristic elements of the Zhob civilization, that is to say, the cremation of corpses, phallic representations and the manufacture of clay statuettes representing women and animals are found; on the other hand, metal objects are lacking.

In the south of Baluchistan, at Kulli, at Mehi, the inhabitants practised burial, used copper seals and pins, and this also characterizes the Shahi-tump civilization. According to Piggott,[1] the civilizations of Zhob and Quetta were contemporary with the pre-Harappian or Amrian civilization of the Indus Valley. That of Nal and Kulli corresponds to the period of Harappa; that of Shahi-tump came later.

Different hypotheses have been put forward regarding accurate dating. Marshall himself, after having presumed that the civilization of the Indus must be placed between 1000 and 400 B.C. had to push that date much further back following discoveries which showed the relationships and therefore the synchronism existing between Mesopotamia and India; he finished by proposing a period stretching from 3250 to 2750. According to Mackay, the upper layers of Mohenjo-daro and Harappa go back to 2500. Wheeler[2] and Piggott finally give the dates of the beginning and end of the Indus civilization as 2500 and 1500 and it would seem very much as if, in the present state of knowledge, these figures are final.

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[1] Piggott, *The Chronology of Prehistoric North-West India*, 1946.

[2] Mortimer Wheeler, *Ancient India*, 1947.

They do remain subject to revision, however, because archaeological activity in India is very great and it is becoming increasingly obvious that the civilization of the Indus extended over a much vaster space than that prospected hitherto. Mohenjaro-daro and Harappa are still the most complete and the most spectacular remains of this civilization, but we may expect a lot from sites excavated by Vats at Rangpur, at Kolla Nihang, at Rupar. These discoveries seem to show that this civilization extended from the south of Baluchistan to the north-east of the Punjab, and from the north of Baluchistan to Kathiswar. It is assumed that chalcolithic sites also exist on the Deccan coast, and Glyn Daniel[1] reports Marshall's opinion that he found some in the Ganges basin. Obviously, there remain interesting discoveries to be made.

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[1] Glyn E. Daniel, *A Hundred Years of Archaeology*, Gerald Duckworth, 1950.

CHAPTER VI

FROM BASKET MAKERS TO HILL BUILDERS

FROM THE pampas where scholars seek traces of Pampean man, to the ice fields traversed by the sledges of the Eskimos, America in all its multiple and multiform aspects offers wonderful scope for the archaeologist.

But in America it is impossible to apply the precise and scrupulous methods which Père Poidebard, for example, used on his Syrian explorations. Research is bound to be more adventurous for it takes place in regions which are, as yet, impenetrable. However, it may be hoped that the vast temples which Colonel Lindberg saw in the jungle of Yucatan will soon be within the reach of axe and pick and that daring mountaineers will one day resolve the enigma of the gigantic pre-Inca constructions and mysterious "pock-marks", of which the origin and nature has not yet been discovered. Serious scholars, whose good faith cannot be doubted, have noticed animals in cave-drawings shaped like large saurians of the Secondary period. Could there have been men at some period who were actually in contact with these prehistoric monsters? Native fables recall the fear caused by the appearance of similar monsters. And there are so many other legends telling of powerful empires still existing in the unexplored forests of the Amazon basin, or of the tribes of White Indians believed to be descendants of the conquering Vikings who discovered America six or seven centuries before Columbus and who founded families in regions till then inaccessible to Europeans.

Certainly, the prodigious legends that the Spaniards heard when they landed here have not completely disappeared and are often sufficient to involve adventurers and scholars in fantastic explorations. And the ignorance which still exists, for example, regarding the "mound builders", those enigmatic Indians who erected in the prairie astonishing hillocks shaped like serpents, bison, tortoises, crocodiles and even elephants (although there have never been elephants in America and the problem of these representations is the subject of passionate discussion in academic circles) is an added attraction, a further incitement to research and discovery.

Though it is customary to think of the Indians as scattered and nomadic tribes, archaeology has revealed the presence of great empires and numerous and important towns in the most unexpected places. According to Spinder, there were over 75 million Indians in North and South America about the twelfth century.

What has happened to them? It is known that the Spaniards massacred whole nations. But these massacres and the progressive annihilation of the Indians in the United States are not sufficient to account for the disappearance of the great ancient empires. Well before the arrival of the Europeans, the highest American civilizations were already on the way to decadence and regression. Thus some of the most magnificent capitals were destroyed, either by war or natural catastrophe, or abandoned by their inhabitants after an epidemic or for some unknown reason, probably religious or magical, or simply in obedience to that wanderlust which periodically seized the red races and involved them in immense racial migrations—as if the American man had retained from his vagabond origins a taste for lengthy wanderings across the continents.

What is American man? To what race does he belong? Where does he come from? So many questions have still not been definitely answered. Some idea of the extent and importance of the problem can be gained from Paul Rivet's work *Les Origines de l'homme américain*[1] and *La America Indigena* by Luis Pericot y Garcia, Professor of Ethnology at the University of Barcelona.[2]

This question occurs at the beginning of all our study of American civilizations. Is American man autochthonous or was America populated and civilized by races from other continents? This problem has always aroused inexhaustible controversy to which ethnography, archaeology, art, history, history of religion, and folklore all contribute. To conclude—is there one American race or several races?

All manner of arguments are offered in support of the various theses. Aestheticians, for example, invoke the relationship between the arts of Asia and those of America; biologists, also partisans of the theory of Asiatic origin, base their opinions, *inter alia*, on the presence of the famous "Mongolian blue spot" at Peru, Paraguay and Bolivia. This question of the blue spot is infinitely curious but we cannot embark on it here, and invite the reader to consult the important bibliography devoted to the subject in the book by Luis Pericot cited above.

It is generally admitted today that the population of America goes no further back than the quaternary age in the Pleistocene period, though there are still enigmas which appear to contradict this. The cave-drawings of saurians, for instance, imply either a man contemporary with this period or the survival of the animals up to the moment when man himself appeared. A recent work by Raymond

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[1] Paris, 1952.

[2] Barcelona, 1936.

Furon[1] deals with these surprising allegations. "The enormity of the proposition makes it possible to eliminate it," he writes, "but so far as animals who may have been contemporary with man are concerned, the difficulty of interpretation is greater." Moreover, a work by J. H. Steward, *Petroglyphs of the United States*, published in 1937 by the Smithsonian Institute of Washington, gave a complete corpus of all the then known American petroglyphs.

Other sources have tried to base the existence of man at the Tertiary period on the discovery of human footprints at Carson in Nevada and near Lake Managua in Nicaragua. Finally, there are some amazing statements by Samuel Hubbard, who claimed to have found in the canyon of Hava Supai in Arizona, rupestral drawings of diplodocus, sculptures representing a dinosaur, petroglyphs of the Tertiary period bearing Chinese characters, a human tooth in an Eocene rock, a footprint in Triassic territory, etc.[2] Although deposits at Trenton, New Jersey, have not yielded as much as was expected (see the conclusions published in this context by H. G. Richards in 1939), the site of Folsom, discovered in 1927 in New Mexico, has supplied abundant material, going back to the end of the Ice Age and contemporary with our own Mesolithic. This was a civilization of nomadic hunters, whose remains have been found in Colorado and Nebraska, and who followed troops of migrating bison. Tools have been found associated with the bones of mammoths, horses and camels, mingled with silex implements characterized by a certain type of spearhead, or assegai, finely cut and finished, which is called the "Folsom head" and which is like a signature at all the sites where it appears.

The numerous theories relating to the origin of American man can be summed up under three headings. The polygenetic theory, which concludes that there were several centres of creation; the monogenetic theory based on the belief in a single centre; and the ologenetic theory which derives from both the others, and proposes a mixed solution.

Amongst the best known and most interesting hypotheses is that of Elliott Smith, called the heliolithic theory. It is based on the resemblance between the great American cultures and those of ancient Egypt.

The semitic theory also had numerous followers. According to some sources, the Americans were the direct descendants of Adam, and the American languages derive from that spoken in the Terrestrial Paradise. According to Berloin, this was *Algonquin*, according to Villamil de Rada *Aimara*. To others, the Americans are the descendants of Noah; at the time of the Flood, Brazil is said to have been peopled by Ophir, and Peru by Jobal. According to other interpretations, they are descendants from the inhabitants of Canaan who, driven from the Promised Land by the Hebrews, took refuge in America. Those who cite Diodorus and Aristotle state that they are descended from the Phoenicians. Phoenician characters are even supposed to have been seen on the famous stone of Dighton Rock—which will be dealt with in greater detail later. Ancient Ophir must have been America and this was where the Tyrians disembarked when banished by Alexander. Others again make them descendants of the Carthaginians who settled in the New World during the first Punic War.

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[1] *Manuel de Préhistoire générale*, Paris, Payot, 1943.

[2] *Discoveries Relating to Prehistoric Man*, San Francisco, 1927.

All these theories are interesting because they all invoke the evidence of archaeology as well as phonetics and morphology. Thus when Horowitz found inscriptions resembling Hebrew in the tumulus of Grave Creek, Ohio, he used this proof to support the claim that America was the Arsareth of the Bible, the desert land whither, according to Ezra, certain tribes emigrated. The new continent became the native land of the ten lost tribes, and was later evangelized by Saint Thomas. We must repeat that all these theories have been propounded by very serious people, and are supported by a quantity of ingenious and striking proofs.

According to the various supporters of the Mediterranean theory, the ancestors of American man were Carians, Hittites, Etruscans, Hyksos, or Philistines. The champions of Greek origin claim the authority of Plato in support of their thesis, stating that he inspired the Peruvian system of government. The Spaniards and the Basques also have their supporters, but the most serious of all these systems seems to be that of Elliott Smith. The theory of Egyptian origin has in fact won the support of a whole school—known as the Manchester School. It is based on numerous proofs and is supported by arguments which are well worthy of attention, for example, those based on the Megalithic theory, resemblances in the art of ceramics, in customs, the solar cult, and the pyramids.

The more fragile theory of a European origin looks for the ancestors of American man in Courland, Germany, Scandinavia, Friesland and Wales. More substantial than the story of the fantastic navigations of Madoc ab Owen Gwynedd is the belief that the Eskimos were Magdalenian men.

Purely for the records, we must also mention the African theory that makes the Americans descendants of the Ethiopians or negroes of Equatorial Africa. Also the Oceanian theory, according to which they were of Polynesian or Malayan origin. Finally, there is the autochthonous theory, which has its ardent and convinced supporters.

It seems, however, that the majority of modern Americanists today support the theory of Asiatic origin and are only divided as to whether the origin is Mongol, Tartar or Chinese, Scythian, Sumerian, Indian, pre-Aryan, or the Cham civilization of Indo-China.

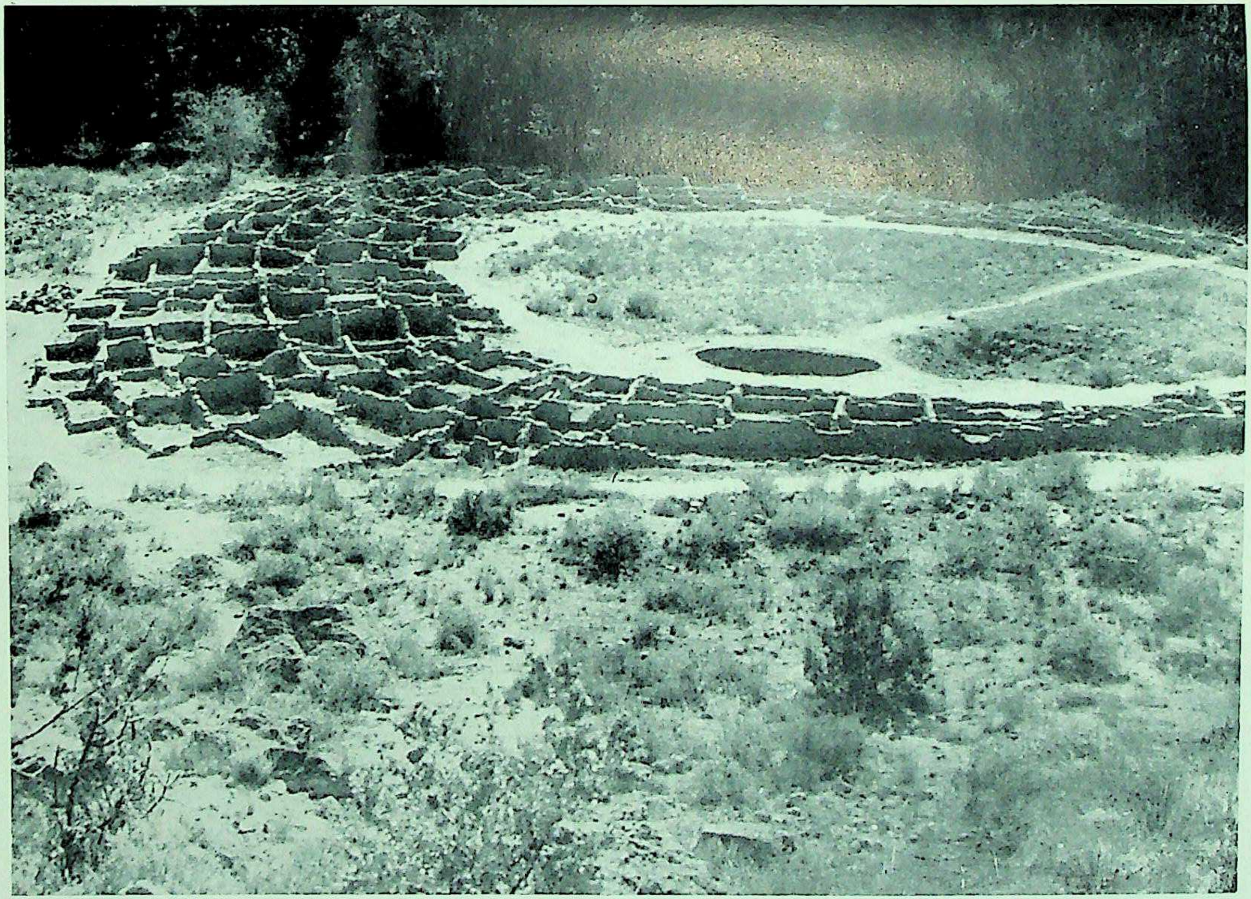
It seems extremely probable that as from some indeterminate period, Asiatic tribes moved steadily (according to Hrdlicka of the Smithsonian Institute) from one continent to another by way of the Behring Straits. These immigrants, who found Siberia inhospitable, would have made the crossing easily. Starting at Alaska, they could then have spread throughout America.

When the Spaniards landed in America some centuries after the Vikings had already discovered the New World, they were surprised to encounter copper-coloured men. In the belief that they had reached the Indies by an unaccustomed route, they called them Indians. Some time later, it was established that America was a continent in its own right, isolated from Europe and Asia. Scholars, convinced of the single origin of the human race, whether the origin lay in Europe, Africa, or Asia, asked themselves how, in the absence of any bridge, these original men could have arrived there.

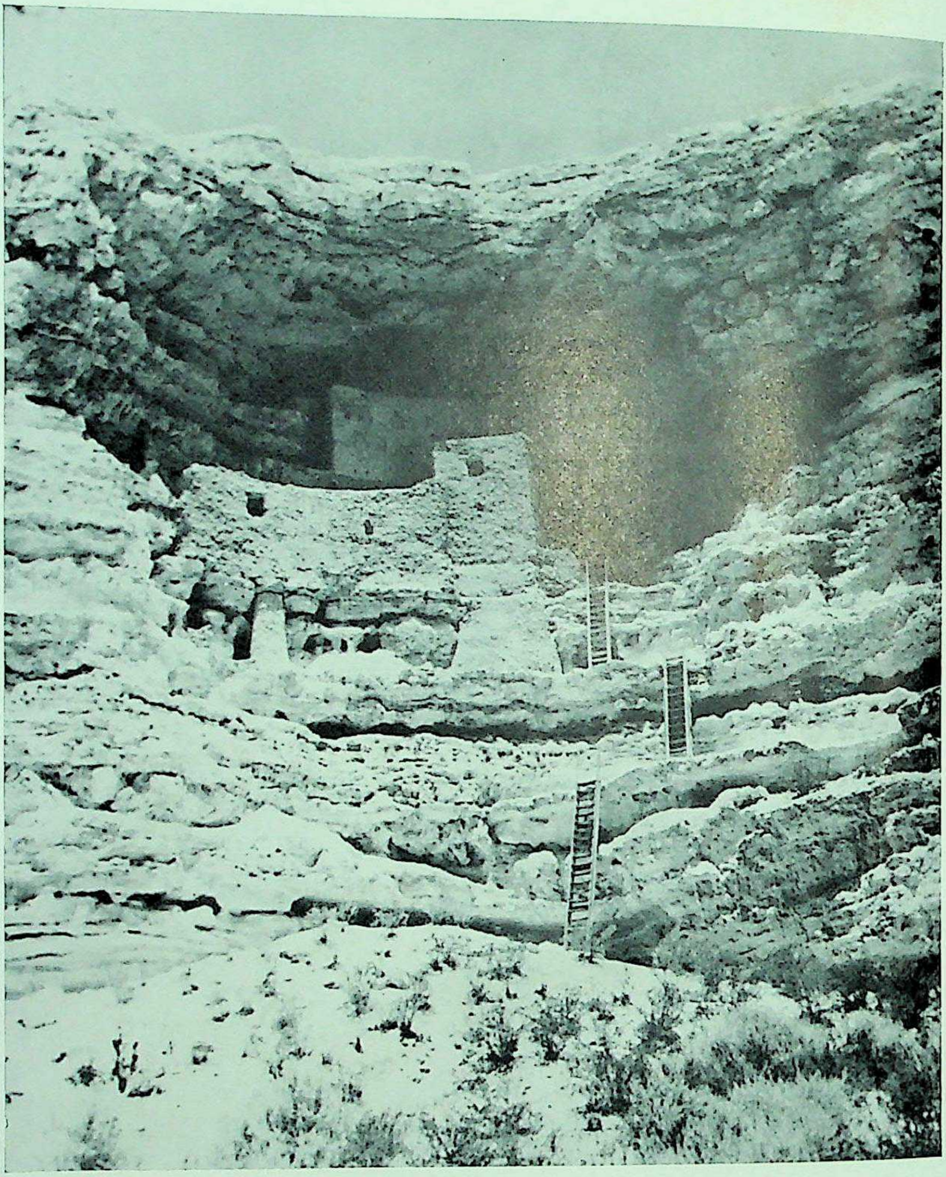
Wegener's unusual theory of the derivation of continents, which presents America as a block detached from Europe and Africa, a theory based on the profile of the coasts which fit perfectly against each other, could have explained the passage of the first men, if the division between the two continents had not been made several million years before humanity appeared on the earth. Agreed that man did not come originally from America, the ancient scholars asked where he did come from.

In the eighteenth century, it was maintained that he came from Mesopotamia, and belonged to the Semitic races. In 1927 the Englishman Elliott Smith gave added weight to an ancient opinion that original man was Egyptian. In opposition to this, Maximo Soto Hall in 1937 claimed that, far from colonizing America, the ancient Egyptians were descendants of the Maya who emigrated to Africa at an indeterminate date. In the sixteenth century, it was asserted that Atlantis formerly constituted the bridge between America and Europe—and this opinion has always retained its supporters. The theory of Germanic or Aryan origin of American man was finally expounded in 1871 by an Argentine scholar, Vicente Fidel Lopez.

An American archaeologist, Ameghino, in 1921, while accepting the thesis of a single origin, maintained the view that man appeared on the earth for the first time in America, in the middle of the Tertiary period, in the form of a being of short stature, the ancestor



Ruins of the Pueblo of Frijoles



Pueblo known as "Castle of Montezuma", Rio Grande Basin of all prehistoric men previously discovered. The *Prothomus* and *Tetra prohomo argentinus* would be issue of this *Homunculus patagonicus*, as Ameghino called him. However, not many scholars supported Ameghino in considering America the cradle of humanity. But if the first Americans came from elsewhere, whence did they come and at what period did this migration take place?

In 1926, a New Mexican cowboy, driving his herd by a river, was surprised to notice bones projecting from the cliff alongside. He detached a few of them and discovered silex arrows mingled with the bones: there was even a stone head buried in the vertebrae of a bison, which probably caused the animal's death. He gave the news of his discovery to the inhabitants of the small town of Folsom nearby, and scholars hurried to the scene to study the bones and silex weapons.

Some time afterwards similar collections of remains of mammoths, mastodons, megatheriums, giant bisons and other species of animal long extinct, appeared in various localities in America, at Clovis, Burnet Cave, Lindemier, and Dent. The human family who manufactured these silex implements and used them to fight and dismember heavy game are designated as "Folsom men". The hunting equipment of the Folsom men and the nature of their victims were known; the man himself remained unknown, for no human bone was found on Folsom sites.

Shortly after the discoveries at Folsom, remains of animals and silex heads, originating from still more ancient men than Folsom, known as the "Sandia Cave men", were found in New Mexico, in the cavern of Sandia near Albuquerque, under an enormous layer of bats' guano. But the appearance of these men is also unknown. It is impossible to give a definite date to the most ancient remains found in America: the animal bones of Folsom, found in the neighbourhood of the arrows; the young girl of Minnesota, of whom it is only known that she was sixteen years old; the man of Brown's Valley; that of Rio Brazos, etc. At El Cauce, not even bones were found, only footprints.

These footprints are every bit as moving as those seen in the sand of French or Spanish grottoes. "At a time when the layer of mud was still soft," writes Canals Frau, in a very remarkable work, *Preistoria de America*, "the men and animals who passed left their foot prints. Later, when the mud had solidified, a shower of volcanic ashes fell which protected the traces indefinitely. The same process of alternating casts of mud and falls of volcanic ashes continued later. Then a succession of other geological phenomena resulted in the sediment several feet thick which is today inserted between the deep layer with the footprints and the surface of the soil."

It is impossible to enumerate all the prehistoric remains discovered in South America, the United States and Central America from the Magellan Straits to Alaska. The most ancient remains are probably those of *Border Man*, which go back forty thousand years.

The first Americans of whom traces can be found, were already in the Valley of the Yukon at least thirty thousand years ago, at the Pleistocene period. They came from Asia, or rather the Asian part of the continent, for Alaska and Siberia were not yet separated by the Behring Straits and Asia and America formed one continent. "During the period immediately before the last maximum of Wisconsinian glaciation, in the inter-period W2 W3, a wide corridor opened between the glaciers of the mountains of the west and the eastern centres of glaciation of the Hudson Bay and Labrador. By venturing through this long corridor", writes Canals Frau, "the first group of Asiatic immigrants emerged into the central part of the great plains of North America." This last glaciation after which the "Behring bridge" was broken, preventing land crossing by Asiatic emigration, is called the Mankato by geologists and placed by Antevs at about 25,000 B.C.

Archaeological discoveries thus confirm the theory of the Asiatic origin of American man, maintained by Acosta and particularly by Hrdlicka. But Hrdlicka's opinion tends to be too absolute in admitting only a single Asiatic origin. Oceanic interventions must equally be taken into account in the origin and development of American civilizations, as Professor Rivet has shown so well, and probably also Australian influence which may have penetrated to the other extremity of the continent across the Antarctic, according to Mandes Corréa.

Canals Frau points to the parallels between the manifestations of civilization in Europe and America, during the upper Paleolithic, and emphasizes the analogies. This suggests that a new culture emanated from Siberia in two opposing directions, bearing similar characteristics. The melting of the Pleistocene ice raised the level of sea water and, by creating the Behring Straits, opposed a barrier to infiltration by Asiatic immigrants, until a second stream of population, again originating from Asia, but for whom the Straits were no obstacle, arrived in America, in the course of the Mesolithic period. These were the Mongols, whose presence is also found in the European Mesolithic, corresponding to the Maglemosian and Ertebollien.

This Eskimo civilization, dependent on fishing and navigation by kayak, dominated Siberia three or four thousand years ago. About two thousand five hundred years ago it had established itself over the whole arctic seaboard of America. It came first to Alaska and then reached Labrador, Newfoundland, Greenland and Canada. The salmon fishermen of the north-west coast and the shellfish eaters whose "kitchen waste" has formed enormous hillocks, called by archaeologists *kjoekkenmoëding*, and by the present inhabitants, *sambaquis*, developed an extremely strange type of civilization, which has strong affinities with that of the Eskimos and thus confirms their common origins.

These Mesolithic piroguers, as Canals Frau calls them, from whom the Haidas, Kwakliuts and Tlingklits are descended today, then turned towards the south. They crossed the whole of America from North to South, leaving a few traces of their settlements everywhere, and arrived at Tierra del Fuego.

If paleolithic men (Folsom and Sandia Cave, for example) were hunters and the Mesolithic piroguers fishermen and mollusc eaters, other people whose food was perhaps not exclusively, and not principally vegetable appeared with the fortuitous discovery of the Pinto Basin by gold diggers in 1930. Discoveries in the Mohave Desert in 1948 brought to light evidence of the presence of instruments called *metates* used to crush corn, or rather grain; this civilization was based on fruit-gathering and maize cultivation.

Next to them are the acorn-eaters, remains of whom have been found at Santa Barbara. They found a very ingenious method of making the fruit of the oak edible. Their recipe can even be found in *Homme primitif américain* by Hibben. The settlements at Lake Pinto and the Mohave Desert (the former were studied by Stahl in 1948) go no further back than three thousand years. "The method of Carbon 14 applied to fragments of charcoal originating from the fires," proves, according to Hibben, "that humans camped in California almost as early as in any other region in the West."

The "oakwood men"—as their discoverer, David Banks Rogers, calls the acorn-eaters—would be their contemporaries. The extent of the problem of dating archaeological remains can be imagined when it is recalled that remains of human occupation can be found in the cave of Ventana, to the west of Tucson, Arizona, showing quite irrefutably that it has been inhabited by Indians and the Indians' ancestors for over twelve thousand years.

In 1880, in one of the wildest canyons of Utah, the Grand Gulch, a traveller called Richard Wetherill, nicknamed by the Navajo Indians *hosteen* (i.e., the respected, the venerated), discovered a collection of tombs in dwellings hollowed in the cliffs, under projecting ledges of rock. Here the corpses were covered by large baskets made with highly refined plaiting technique and decorated with magnificent designs in red and black, producing a most striking effect. The "basket-makers" gave birth to the civilization of the

Pueblos, with which we leave pre-history to enter the historic period. At first, these peoples knew nothing of pottery, but found a way of making tightly woven basket-work which they spread with a layer of clay to make it watertight. They inhabited natural caverns in the cliffs and lived on game, maize and fruit.

Later they settled down, constructed veritable cities among the rocks, and manufactured pottery, the idea of which may have come to them from the earth covering they gave their "vases" of basket-work. Today the uninterrupted succession of the various stages of the civilization on the same sites has been established, from the lowest state—and therefore the most primitive—of the Basket Makers, to the final stage of the culture and art of the Pueblos, who excelled in ceramics and weaving.

The Eskimos prudently followed the Arctic coasts to pass from Siberia into Alaska, and thence spread over all America. At the neolithic period a new race appeared in America, coming from the Malay Archipelago. It is possible that this Malayan or Malayo-Polynesian invasion was made by sea, using large ships with outriggers which made long, daring voyages possible. They were also able to utilize the currents, in the same way as the Kon-Tiki sailors, who showed that crossing the ocean by raft from America to the South Seas was not impracticable and confirmed their theory that the Americans had done it before them, to go from Peru to Tahiti.

What is possible in one direction is possible in another, if one does not simply follow the currents. The theory maintained by Professor Rivet and Mendès Costa that America was populated by men who had come from Malaya, Polynesia and Australia, is supported by extraordinary analogies between the art and civilization of these countries and those of America. Imbelloni, also a supporter of the "multiple population" theory, has established very clearly the sequence of these influxes, which he says came successively from Tasmania, Australia, Melanesia, Malaya and Indonesia. Imbelloni emphasizes the fact that these waves of human population must not be considered as conscious attempts at conquest or colonization, but much more as simple diffusions in space of people who, in other respects, dominated the Old World.

In any case, no attempt at dating can be made. The oldest dates in American history which can be presented with any degree of certainty only begin with the "birdgod" of Tuxla. This is a small jadeite statuette discovered in Mexico, and bearing a Maya inscription with the date corresponding to what we would call May 16th, 98 B.C. The Maya were skilled calculators, using all the astronomic resources then available for their calculations. The mystery which still surrounds this people makes it impossible to know at what period they commenced their datation, nor if it was as old as that of the Sumerians or the Sothic calendar of the Egyptians. But it probably goes back to very deep antiquity.

How old are the gigantic ruins of the civilization of Tiahuanaco which have been found on the Andean Meseta of Bolivia in the neighbourhood of Lake Titicaca? Possibly they go back to such a remote date that conjecture is just stupefying. It becomes even more so because there are remains of two different civilizations in this area of Tiahuanaco. The older is represented by ruins of cities and temples which are at present covered by the water of the lake, at Siminake and Huacullani, and by deposits lying below the monuments said to belong to the "classic period" of Tiahuanaco. The second civilization, to which belong the monuments still in existence, at some distance from the banks of the Titicaca, dates from the time when Tiahuanaco was a port. When methodical and complete excavations have been made at Taraco, Cusijata, Escoma and Loquepaya, there may be sufficient data to establish the beginning of at least a relative chronology which may enable the antiquity of the "first period" to be established in relation to the "second".

The hypotheses advanced by H. S. Bellamy to explain certain decorative details, the presence of winged fish, for example, which only inhabit tropical seas, on monuments situated on plateaux more than thirteen thousand feet high, are extremely tempting. The characteristics of the buildings still *in situ* will be examined further on. As far as the remains they cover and the unexplored sites are concerned, we have only the vaguest conjecture. Bellamy's book on Tiahuanaco[1] is full of ideas and curious data. He outlines a geographical interpretation of the superposition of cultures on the high Andean plateaux, arguing from the geological upheavals which modified the altitude and appearance of the plateaux. The conclusions of this work are at times somewhat venturesome; here is a problem analogous to that of Atlantis. It is a problem that concerns the existence and disappearance of a most beautiful and refined culture. The builders who constructed monolithic buildings (in order to resist earth tremors) and decorated them with symbols must have been the élite of a whole people, scholars, priests, artists and poets, taking refuge on this high plateau from some gigantic inundations provoked by an unknown "satellite". These symbols can today be deciphered with difficulty. In the sculptures on the door of the Temple of Kalasasaya, Bellamy sees a calendar from which ruins can be dated, according to Edmund Kiss. (Here it is interesting to compare the theories of the author with the curious theories of

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[1] *Built before the Flood, The Problem of the Tiahuanaco Ruins*, 1943.

Hoerbiger.) Tiahuanaco, however, was not sheltered from cataclysm. Gigantic flood waters one day overflowed the passes of the circle of mountains surrounding the plateau and drowned the cities. Today we only know their imposing ruins, which, until the present, served as a quarry for the blocks of andesite—hewn how many millennia ago, by the tools of the artists of Tiahuanaco?

One hesitates to draw conclusions. The image of the toxodon appears repeatedly on the sculptures of these monuments—and the toxodon is a prehistoric animal, extinct since the tertiary period. It stands beside the flying fish which inhabit tropical waters. And Lake Titicaca, with its icy waters, has stood at an altitude of more than 14,000 feet, ever since the tertiary period. Can it be supposed (Hoerbiger and Bellamy still hesitate to state that it was definitely so) that at a certain period of the tertiary era a colossal upheaval lifted the Andean plateau from sea level to its present height? Can it be further supposed that it was already inhabited by man possessing the remarkable civilization to which the ruins of Tiahuanaco bear witness? This seems so extraordinary that one hesitates to make such a hypothesis. Bellamy, on the other hand, perceives reptiles and giant Batrachia (apart from the tertiary toxodon which are much older still) in the sculptured motifs.

After the primary problem of the origin of American man, the next to preoccupy archaeologists is the discovery of America. It is now known that, well before Columbus, Europeans and Asiatics had landed in the New World. Beuchat has examined in great detail the different currents which diverted Chinese and Scandinavian navigators from their normal course, and pushed them towards the coasts of the Atlantic and Pacific. Ancient Chinese chronicles contain numerous allusions to a continent called Fu-Sang which may well have been America. Finally, aestheticians cannot help but notice the striking affinities between Chinese art and certain aspects of American, Maya and Peruvian art.

Apart from ancient Nordic sagas which claim that the Vikings discovered America, the visit of Eric the Red and his descendants is confirmed by archaeological discoveries in Greenland, or America proper. Runic inscriptions in Greenland have an indisputable character of authenticity. Those on the continent of America are less explicit and it is dangerous to draw any conclusions from the famous spearhead found at Pemaquid in Maine, the silex of which does not come from American rocks but only from the rocks known as *halleflinta* frequently found in Scandinavia.

Ruins of stone buildings were also discovered in 1928 on the Isle of Sculpin, off the coast of Labrador, by an expedition from the Field Museum. There is the supposedly runic inscription of

Monhegan in Maine, the characters of which might merely be scratches on the stone. Finally, there is the inscribed stone of Dighton Rock in Massachusetts which has been the theme of many erudite and impassioned discussions.

Everything has been seen on the stone of Dighton Rock: Chinese characters, a Hebrew alphabet, Phoenician letters, Druidic signs, even a Telamon text! The inscription, whatever it may be, is all the more difficult to decipher because Indian graffiti, obviously done later, cover and confuse the ancient characters. Some think—and they could be right—that they see the name of Thorfin Karselfni inscribed on the Rock. He was one of the Vikings who, according to the sagas, visited America. And quite recently, using photographs taken at an appropriate angle and with a certain type of lighting, E. B. Delabarre of Brown University has deciphered the name of Miguel Cortereal and the date 1511.

Finally, it is possible that, even before the Chinese and the Vikings, the Irish and the Welsh (if a certain amount of historic veracity is accorded to the various accounts of the Welsh bards of the legendary navigations of Madoc ab Owen Gwynedd) landed on American coasts. But at the period when the Chinese, Vikings, Irish and Welsh would have disembarked on the New World, curious forms of civilization going back to extremely remote periods already existed there.

In the south-east of the United States, and particularly in the caverns of Utah and Arizona, traces have been found of a people designated "Basket Makers", in accordance with the nature of their customary utensils. These people remained at the basket-work stage, known to be one of the first steps reached by prehistoric man in the evolution of his civilization. But these people had already passed the stage of hunting and fishing. They were agriculturalists. The conditions of life of these ancestors of the present-day Indian are now fairly well known, particularly as a result of research by Kidder for the Phillips Academy and Guernesey for the Peabody Museum. They inhabited natural shelters hollowed in the side of rocky cliffs, and used caves to bury their dead.

Examination of these tombs, consisting of small wells hollowed in the soil, supplied a certain number of skeletons and corpses, naturally mummified, which provided a great deal of information. Scholars were greatly surprised by the fact that, while the men had long hair, the women wore theirs close-cropped. This anomaly is explained when it is remembered that cords, straps, and handles were made of plaits of human hair, much more substantial than the yucca fibre from which the baskets were made. Baskets served all purposes, and the Basket Makers knew no other receptacle. Thus food was cooked in baskets covered inside with a layer of clay to make them watertight, and food was placed inside them together with the hot stones used to cook it.

The Basket Makers manufactured clothing from pelts ingeniously cut in lamella, then woven around yucca cords. They loved dogs, and mummies of their favourite animals have been found in their tombs, with deer bones placed nearby so that the animals, like their masters, shall not lack food in the hereafter.

The Basket Makers brought the basket-work industry to such a degree of perfection that they succeeded in manufacturing a type of pail to carry water, made watertight by a covering of gum. These baskets, of which a considerable quantity have been found, are not only extremely well made, but they also carry a geometric decoration in red and black which achieves quite a striking effect. It is tempting to read symbolic significance, or a stylization of representational forms transformed into abstract diagrams, into these ornamental themes, the most frequent of which are the spiral and the zig-zag. But as all their legends and religions are unknown, such identification seems barely probably. Magoffin[1] has tried to interpret them, however, comparing them with pottery discovered at San Juan in New Mexico.

It is in fact impossible not to be surprised by the resemblance between these two decorative forms. It might even be said that the pottery had directly succeeded the basket, having adopted its form and ornamentation. This makes it credible that once again fortuitous circumstances facilitated the transition from the basket-work stage to that of pottery—perhaps a negligent cook who left a basket covered with clay near the fire and returned to find a terra cotta vase whose basket-work covering had been burned.

American scholars continued to seek the possible transition from the civilization of the Basket Makers to that of the Pueblos, until Roberts in 1928 found the ruins of a village in Colorado which appeared to have all the characteristics of this transitional state. The inhabitants, surprised by fire, had not been able to leave their dwellings, and, a human detail, the catastrophe had occurred at the very time when the villagers had brought in their harvest of corn, beans and dried fruit. Of skeletons found, some belong to the race of the Basket Makers, others to the Pueblos. They are clearly distinguishable by the shape of skull. The Basket Makers had elongated heads, while those of the Pueblos were round, and they exaggerated the width and flatness of their skulls still more by deforming the heads of the children with boards and straps.

Not only did the knowledge of pottery and the use to which they put it distinguish the Pueblos from the Basket Makers. Here was a people who reached a high degree of civilization, built villages which, like those of the Aztecs in New Mexico, could hold over 1,500 inhabitants, and employed processes of construction which marked considerable progress in both defensive technique and town planning proper. Aerial photographs of these conglomerations built in a semicircle and made up of dwellings one on top of the other show how impressive they must have been.

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[1] *Op. cit.*, p. 214.

To escape their enemies, the Pueblos sought refuge in the cliffs, but while the Basket Makers were content to be simple cliff-dwellers, satisfied with natural shelters or at least only fitted out in a rudimentary fashion, the Pueblos chose to settle on high plateaux, difficult of access, called *mesas* (whence the name Mesa Verde, for example: *the green table*). Installed on these *tables*, the Pueblos were almost completely impregnable and were thus able to reach the degree of civilization to which their pottery bears eloquent witness.

Pueblo Bonito, the semicircular town in the Chaco Canyon, saw the beginning of excavations in 1896. However, these were later abandoned and it was not until 1921 that the work of restoration began to show results. Judd, who has produced the most valuable information on the history of the "beautiful town", recognized the remains there of four superimposed towns, the oldest of which probably goes back to 500 A.D. Six centuries later, Pueblo Bonito was abandoned. The reason why its inhabitants left such a well-constructed town in such a secure strategic position is not known.

The first inhabitants of Pueblo Bonito built in a fairly rudimentary manner—Judd has been able to distinguish perfectly between the work of these first occupants and their successors. The second inhabitants were not content with this primitive architecture and developed the remarkable technique to which the four storeys of the pueblo, with its eight hundred dwellings, still stand as evidence today. The report made by Judd to the National Academy of Sciences in 1927[1] shows that "those of the first group dwelt for several generations in their moon-shaped pueblos before the second group arrived, presumably by invitation, and introduced superior architectural and cultural practices that quickly won for Pueblo Bonito pre-eminence among all contemporaneous villages north of Mexico. All archaeological evidence shows these two Indian peoples to have been entirely distinct and independent from each other. And yet they dwelt side by side and lived the same sort of life in the terraced town."

The inhabitants of Pueblo Bonito were rich, particularly in turquoise and grain, which constituted their most valuable treasures and would surely have excited the envy of their neighbours had not the impregnability of their town sheltered them from sudden attack. Why then did they abandon this secure and beautiful retreat after only six centuries of occupation? Scholars are lost in conjecture. . . .

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[1] Magoffin, *op. cit.*, p. 223–4.

Apart from Pueblo Bonito, the Chaco Canyon contains eleven less important pueblos which are nevertheless very interesting and have completely different individualities. In the study of pueblos, it is in fact interesting to note that each village had its own personality, very different from that of its neighbours.

The pueblo of Chettro Ketl, which was excavated under Hewett's direction by the School of American Research, confirms what is known of the technical perfection and ingenuity of these builders. It contains a sort of vast circular chamber, hollowed out of the soil and surrounded by walls three feet thick. This is not the *kiva*, usual in pueblos still inhabited today, and must have served unknown religious ceremonies. The inhabitants of the pueblos have left neither texts nor inscriptions. As their towns were, for the most part, abandoned several centuries before the arrival of the Europeans, it is now almost impossible to know the nature of their traditions and beliefs.

The pueblo of Pecos was still occupied a hundred years ago, and its history goes back at least a dozen centuries. Its ruins are less impressive than those of the Chaco Canyon (Pecos is near Santa Fé), but it holds the largest and most curious cemetery discovered in America. After only a few years' excavation, Kidder unearthed over two thousand human skeletons which have been particularly useful in enabling ethnologists to study the diseases from which the Pueblos suffered, notably tuberculosis. A tomb of a doctor was found there, containing a complete outfit of flutes, pipes, paintings and stones which he used to cure the sick. The unknown doctor of Pecos must have been much admired and also generously remunerated, to judge by the shell necklace found in his tomb, composed of 5,700 skilfully worked "pearls".

It is in the region at present inhabited by the Zunis that the tales of the Spanish conquerors locate the famous "Seven Towns of Cibola" which excited the imagination of the conquistadores. In 1917 an American expedition, directed by Hendricks and Hodge, commenced excavations into the ruins of the pueblo of Hawikuh in New Mexico, where it was supposed that the most important of the seven towns was to be found. Archaeologists discovered habitations and tombs belonging to various periods, recognizable by the different qualities of the pottery. The source of customs and rites still in use among the present Zunis was also found here, including the weaving of cotton, the cult of the parrot, the manufacture of mosaics in turquoise, and the domestication of the turkey. With the pueblos generally, the turkey served multiple ends. When its flesh had been eaten, its bones were used to make tools, its feathers to make clothes, in such a way that nothing was wasted. Magoffin points out the importance of cremation in "killed" (i.e. pierced), vases[1] amongst the different methods of burial employed at Hawikuh. This custom of "killing" objects dedicated to the dead seems to have been fairly common among primitive peoples, and this is why objects found in tombs so often appear to have been broken deliberately.

The pueblo of Elden in Arizona, near Flagstaff, was discovered by Fewkes of the Smithsonian Institute in 1926, after the fortuitous felling of trees had revealed traces of human settlements. The excavations brought to light tombs containing various assortments of kitchen and household utensils made of earth, the size of children's toys, and of very mediocre pottery which shows none of the evolution and progress visible in other pueblos. Again in Arizona, there are the ruins of the pueblo of White House in the Canyon of Chelly. The greater part of these had been destroyed before Morris began methodical explorations.

The ruins of Mesa Verde in Colorado constitute one of the best examples—and the most easily accessible—of the art and technique of the Pueblos. They have been described by Paul Radin, Professor of Anthropology at the University of California.[2] He describes them as being situated in a cave some 400 feet long, 80 feet wide and 80 feet high at its maximum. They contain the remains of a building, an enormous communal house which must have comprised 170 rooms without counting the upper storeys. The people who lived in these houses practised an extensive agriculture in which artificial irrigation was of prime importance. It has been calculated that the reservoirs situated near the Los Muertos ruins in Arizona contained enough water to irrigate at least 60,000 hectares of land. Cotton was planted and was made much use of. Radin also states that fine ceramic ware has been found there, with much variety of forms and quality. Some of the pieces, he adds, are decorated with polychrome motifs in fine workmanship. They are also decorated with human or zoomorphic figures, turquoise beads and mosaic remains, also in turquoise. Everything goes to show that a great civilization flourished in former days of which the present day Pueblos are the inheritors and descendants.

In January, 1930, Dr. Charles Bergen, while studying the neighbourhood of Casa Grande in South Arizona, found a very

[1] *Op. cit.*, p. 229.

[2] *Histoire de la Civilisation indienne*, Paris, p. 22.

important prehistoric site. It was notable both for the quantity of tombs discovered there and for the quality of the objects revealed. The site of Casa Grande, which has been prospected for some time, and has been surrounded from a very remote period by the fear and veneration of the Indians, would in fact seem to contain the remains of an extremely ancient civilization, obviously earlier than that of the Pueblos. The inhabitants of the Valley of Gila do not appear to have belonged to the same race as the cliff-dwellers, of which the Hopis and the Zunis are direct descendants.

Unfortunately this site is not intact, because the earth has been unsettled on several occasions by water erosion and disturbed by clandestine excavators. The ruins of Gila were visited by treasure seekers well before scholars began methodical research. Despite this, the site is so rich that the quality of the pottery and utensils discovered is well worthy of attention. Numerous photographs on this subject may be found in the *Illustrated London News*[1] with a commentary by Arthur Woodward, who has devoted an important study to these discoveries.

Work by Van Bergen and Irwin Heyden has produced very curious funeral furniture from the tombs of Gila, principally terra cotta vases containing calcinated bones of cremated corpses. The picturesque term "ash-trays" used by workmen at the excavations, exactly describes the shape of these containers, flat-bottomed, with thick sides, ornamented with a rudimentary decoration in red and brown. Birds decorate some, while others show more elaborate shapes and there is also a whole collection of zoomorphic vases of striking liveliness. The shape and Greek key pattern or zig-zag decoration of some of them recall archaic Chinese works. This provides a new argument for adherents to the Asiatic theory of the origin of American man. However, the realistic aspect of these animal representations in the funeral utensils at Gila is rather more important, notably the stone vases decorated with serpents in relief, which are amazingly full of life.

Woodward uses these representations to link the unknown civilization of the inhabitants of Gila to those American cultures which practised the cult of the serpent. The association on carved bones of ibex figures with rattle-snakes is undoubtedly one of the most ancient rites of humanity. Objects buried with the dead also included shell bracelets and rings showing toads, crocodiles and, more rarely, human figures, as well as painted pottery and vases of sculptured stone. A motif most frequently used combines birds, treated in a fairly realistic fashion, with rattle-snakes. Here, as in the union of ibex and reptile, it is the serpent which is conquered and devoured by the bird. Mention must be made of schist palettes of cosmetics, decorated with serpents, terra cotta statuettes, of strange technique and aesthetic, and mirrors made from a collection of pieces of crystals of iron pyrites. Nothing equivalent to these has been found in any prehistoric site in the United States. They appear to have been manufactured at Quiche, in Guatemala, and must have been transported to Mexico, Peru and Arizona.

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[1] July 26th, 1930, pp. 156 ff.

The pottery of Gila is still of very rudimentary technique and decoration, but that of Mimbres is the most beautiful that Pueblo civilization can offer in this sphere. It is not known exactly who these Mimbrenos were, nor how they attained such a degree of excellence. Cosgrove found houses of potters in fairly good condition at Swarts, and has spent five years studying a site particularly rich in objects of all sorts for the Peabody Museum at Harvard. The cemetery which an expedition from the University of Minnesota discovered in 1928 brought to light over 150 tombs. They included a child's tomb exceptionally rich in shell necklaces, bracelets and ankle bells. As at the other Pueblo sites, the vases had been "killed", i.e. pierced, according to Magoffin[1] so that the spirit of the vase could escape by the opening.

Vases discovered in the Mimbres Valley are so abundant and so explicit that Bradfield, who has specialized in the study of these ceramics, has been able to establish all the uninterrupted sequences of this old and complex industry. It is useful to compare the vases of Mimbres with other types of Pueblo pottery which have been described and studied, principally by W. H. Holmes.[2] Their decoration is based on an animal design, less stylized than on the vases of Sikyatki, Acoma or Awatobi. The animals are painted with great animation in familiar attitudes and with familiar expressions, particularly fish. But here, as at Tesuke and Honanki, the beginnings of a movement towards stylization can be seen in the geometric design which covers the body of the animal. This finally resulted in geometric representation of even the outline and general shape of the living figure until it becomes unrecognizable—in a fairly similar way to the process which ended in the abstraction of Elamite ceramics.

When did this civilization of the Pueblos originate? Some archaeologists have thought it possible to answer this question by studying the age of the wooden beams found in the dwellings. But their conclusions are still fairly uncertain. Beuchat[3] had to limit himself to saying: "The age of these ruins is still unknown. It was believed formerly that the troglodytic habitations and constructions in the cliffs represented the most ancient period of architecture of the Pueblos, but Mindeloff has shown that some of these constructions were made, or at least repaired, after the introduction of domestic animals, and therefore at a period after the arrival of the Spaniards. It is therefore very difficult to assign any date whatsoever to these constructions. When Coronado arrived at Cibola (Zuni) in 1540, there were already fairly numerous ruins in the country. The characteristics of the architecture also give no really precise indications: Mindeloff believes that the circular *kivas* or *estufas* in the houses in the cliffs do not represent a more ancient type than the rectangular *kivas* of the modern pueblos. In a word, nothing makes it possible to assign even a relative date to the ruins of this part of America."

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[1] *Op. cit.*, p. 233. [2] *Pottery of the Ancient Pueblos*, Washington, 1886.

[3] *Manuel d' Archéologie Améeicaine*, Paris, 1912, p. 2260

According to Radin,[1] the civilization of the Pueblos must have been of Mexican origin. The maize and cotton, the architecture of the inhabitants of the cliffs and their descendants, the turquoise mosaics, the copper bells and the enamel ceramics, all these elements were of Mexican origin, the way in which they penetrated to the United States was of secondary importance. All the routes converged on the valley of Mexico, but at this latter point, Radin found himself on the threshold of a labyrinth and that, very far from finishing his research, he was only at its beginning.

The problem of the influence of the Pueblos on American civilization in general is no more certain of solution. The relatively feeble influence of the Pueblos, in Radin's view,[2] can be explained in the following way: they were an essentially pacific small tribe, turned into itself, without any spirit of proselytism, who rarely embarked on warlike expeditions and were almost always on the defensive. The Pueblos seemed to have occupied their leisure with perfecting their arts and creating a ritual as rich, precise and rigid as that of ancient Egypt. As unified and complete as this Pueblo civilization was, it is now known that it was only the outcome of a long and tortuous history. The historic affiliations of the tribes who participated in its development and the presence of certain customs show that this was the result of a long series of accretions.

Walter Lehmann[3] does not hesitate to see in these primitive cultures the basis of the whole development of American civilization. "If Mexican civilization has its roots in the region of the Sonora and the Pueblos, this is the explanation of the remarkable affinity between the archaeological discoveries made in the south of the United States and those of ancient Mexico. Probably certain traces of a very ancient culture emerged from the area of the Pueblos and, on the one hand, spread into the region of the Mississippi mounds and, on the other, exercised a fertilizing influence in Mexico. Very intense research would be necessary to find out how far northwards, on the Rio Colorado, this ancient culture of Pueblos made itself felt. In any case, it is the Pueblos which will give the key to the ancient civilization of Mexico. These facts provoke further problems, for example the problem of the relationship with the north-west portion of the American continent, but for the time being, the time is not yet ripe for the solution of these problems."

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[1] *Op. cit.*, p. 24. [2] *Op. cit.*, p. 21. [3] *L'Art ancien du Mexique*, Paris, 1922.

Groups of artificial tumuli are to be found all over the south of the United States and particularly in the Mississippi Valley, the strange shapes of which have always attracted curiosity. Some of these hillocks represent animals: buffaloes, eagles, bears and deer. At one place, there is an enormous earth serpent who seems to be trying to swallow an egg-shaped hillock. Elsewhere, shapes can be distinguished which could be camels, elephants and even mastodons —which revive the old controversies over the problem of the American elephant and its possible co-existence with the first men.

These hillocks shaped like animals and called "mound-effigies", obviously reveal old totemic cults and represent the protector or ancestor of the clan, to whom the monument was erected, possibly for use at religious ceremonies. The serpent-shaped hillocks particularly are connected with the oldest of religions. When one thinks of the famous serpent at Adams County which unwinds along the edge of a cliff for 1,254 feet, the type of men who could erect so strange a monument to a tribal divinity can only be imagined with amazement.

The mound-effigies, which must have had an essentially religious purpose, were not used, as other mounds, either as places of refuge, habitation or burial. Quite exceptionally, the Indians were warned of any danger which menaced them by the appearance in dream of the ancestor-animal, who advised them to construct a mound in his image and to take refuge there. They also served as places of retreat on the frequent occasions when the Mississippi flooded. Even in recent years, during the great flood of 1927, it is reckoned that several thousand inhabitants with their livestock sought refuge on the artificial hills built by their red forefathers.

For a long time the mounds remained objects of curiosity—apart from their usefulness as shelters during floods. They were destroyed without hesitation if they impeded agriculture, or they were excavated in the hope of finding treasure. More would certainly be known of the history and customs of the ancient Americans, the mound-dwellers, if steps had been taken sooner to preserve the remains of their civilization. Methodical study of the mounds only began quite recently and the necessary measures were then taken to preserve them against the negligence or importunate enthusiasm of individuals. In 1925, the State of Illinois bought the largest of all the American mounds, that of Cahokia, near East Saint Louis, which is 104 feet high and covers a space of 16 acres.

Patient and minute excavations, such as those conducted by Langford in the Fisher mound, near Chicago, in 1926, have led to the discovery of a cemetery containing over five hundred skeletons and a considerable quantity of funeral utensils. Instead of the clumsy scattering of discoveries which results from individual excavation by amateurs, large-scale methodical work, accompanied by the most accurate scientific equipment, today enables us to know the mysterious race of mound-dwellers—as far as they can be known.

"A new and unusual method of mound exploration", writes Magoffin, "was introduced in 1928 by Shetrone of the Ohio State Archaeological and Historical Society. Assembling dirt-handling machinery, workmen and a corps of student aides, this archaeologist set out to slice the great Seip mound, one of the Hopewell group, as if it were a loaf of brown bread. The impressive old cemetery had already been dug into here and there, and it had attracted exceptional popular interest because of the great strings of pearls that were found. Now, slice after slice, every cubic foot of earth was removed and each thin cross-section of the hill carefully examined. This technique revealed the method of building the mound. The first Indians started with a small burial heap. Then a thick layer of earth was added to make it a tall pointed pyramid. Over that, later, was piled a new layer of earth to convert the pyramid into a rounded hill, and finally a layer of river gravel was spread over it. Having demolished the Seip mound as thoroughly as he could, Shetrone reassembled it, that it might stand again as a famous land-mark."[1]

The question that arises each time the prehistoric races of America are studied, whether Basket Makers or Pueblos, also arises in the case of the mound-dwellers. Beuchat gives no definite answer. "The question", he says,[1] "is one of the most difficult to resolve. No geological data can be used to date them and anthropological and technological facts also provide no precise indication. Hypotheses which have been made, therefore, rest on a very fragile basis. Trees have grown on a fairly large number of mounds, some of which have reached relatively enormous dimensions. Attempts have been made to ascertain the period when the mounds were abandoned by counting the rings of growth. This means of calculation has given quite different results. On a mound in Ohio, a tree was cut down (the type is not indicated) which numbered 800 rings; another, a chestnut 23 feet in circumference, had 600 concentric circles. A white cedar in Wisconsin is calculated to be 860 years old. But as different varieties do not grow in the same way, this process of calculation lacks precision. One of the mounds in Wisconsin is thought to be of much greater antiquity—a contemporary in fact with the mastodon in America. The 'elephant mound' is situated in Grant County. It was examined and sketched in 1872, by Warner for the Smithsonian Institution. The figure it presents actually does slightly resemble an elephant with a drooping trunk which becomes thinner towards the extremity. In 1884, Middleton gave a detailed description of this tumulus. In his sketch the 'trunk' of the Warner design, is absent; the head ends in a sort of snout, of the same shape as that found on other mounds in the same region representing bears. Colonel Morris, who visited this monument for the Office of Ethnology, is of the opinion that the trunk-shaped appendage could have been produced by a landslide. In short, no natural indication makes it possible to date the mounds, neither their position on the alluvial banks of rivers, nor the grasses which have covered them, nor the instruments they contain, which are generally in an excellent state of preservation."

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[1] *Op. cit.*, p. 177.

The numerous archaeological discoveries which have been made in the mounds since the *Manual of American Archaeology* was written, do not enable us, any more than they enabled Beuchat, to date them. But the investigation and cutting up of the monticules have revealed a quantity of objects which give a very exact picture of the appearance of the men who constructed the hillocks. Several layers of civilization are super-imposed on the sites, and several races meet there. The oldest layers may go back to extremely obscure prehistory; there are others where, as in the mound of Etowah, a Spanish sword was found planted in the earth beside the corpse of an Indian chief.

What did these Hill Builders look like? The cemetery discovered by Langford in 1926 near the Fisher mounds contained skeletons belonging to three different races. These are distinguishable by ethnic characteristics and methods of burial, although it is not possible to determine how many centuries separate any one of these different stages of civilization from another. The oldest inhabitants, whose remains are found at the level of virgin soil, were content to lay their dead in the earth, covering the tomb with a small tumulus. These are men with long skulls. It is curious to note that, near each female corpse was that of a new-born child. These ancient mound-dwellers only possessed extremely rudimentary equipment, limited to tools made of splintered silex roughly manufactured.

The race which succeeded them in this region and in this cemetery was solid, thick-set, vigorous and with round skulls. They knew of pottery because vases containing food lay next to the corpses (in the case of a child's corpse, the hand of the baby was placed in the vase itself so that it would not have to make any effort to take its food). Without abandoning silex tools, these men also used skilfully worked copper instruments. The third race, with a skull still broader than that of their predecessors, was contemporary with the arrival of the Spaniards in America, as is shown by the quality of the objects found in the sepulchres.

The cemetery of the mounds at Etowah in Georgia was recently excavated methodically and scientifically by Moorehead. The efforts of this archaeologist have made known the civilization of the mound-dwellers at the moment of its most perfect flowering. Apart from a cemetery, there is also a very important settlement, with private dwellings, public buildings and tombs. As at Hopewell, the ancient Indian is seen here, decorated with necklaces of beads and shell jewellery, helmeted and armoured in copper. Around him are spread the products of his industry: stone pipes, exquisitely sculptured in the shape of animals, in a style of remarkable naturalism, skilfully worked copper armour, necklaces of beads pierced with extreme care, despite the rudimentary tools at the disposal of the jewellers of the time, and even copper noses, set in the skulls, which probably had some ritual use or religious significance for survival in the hereafter.

There was also pottery, analogous in style to the vases found by Collins in 1926 in South Louisiana and by Moorehead in Illinois, on the Mexican frontier. This pottery is mostly rudimentary but its use was extremely widespread. Fewkes found beautiful vases at Weeden Island in Florida, decorated with designs, which were sometimes geometric, sometimes figurative. Their principal theme was the serpent.

While the first civilization of the mounds was paleolithic, the second layer of culture made frequent use of copper for tools, arms and ornaments. These men also practised intensive commerce. The copper they used in such large quantities was not to be found in their region, and they probably had it sent from Lake Superior. From the Rocky Mountains they received the teeth of the grizzly bear, with which they loved to adorn themselves; from the region of Yellowstone Park, the obsidian, from which they made daggers and arrowheads; from the Appalachians, the mica used for the manufacture of ornaments. They also made great use of pearls—sixty thousand of these were found in a single mound in Ohio—originating from shellfish from the sweet water of the Mississippi and its tributaries.

When these were not available, they replaced them with artificial pearls skilfully manufactured by coating grains of wood with layers of brilliant mica. They were also able to imitate bears' teeth.

Such was the civilization of the Hill Builders, ancestors of the modern Indians, those warriors with copper noses, who erected enormous monticules in the image of their tutelary animal and, having sown the prairies from the Atlantic to the Mississippi, from Florida to Wisconsin and Michigan, with immense dumb effigies of serpents, bears and eagles, majestic offerings to the gods, disappeared into the darkness of history to make way for new civilizations.

CHAPTER VII

THE SECRET OF THE MAYA

HOW LITTLE we knew of the mysterious Maya race when, some sixty years ago, Alfred P. Maudsley, almost alone, penetrated the jungle of Central America. Few archaeological documents are as moving as the simple photograph in the British Museum showing Maudsley in the chambers of a ruined temple in Honduras, between his revolver and his drawing board.

Maudsley devoted his life to Maya archaeology. From 1881 to 1894 he made seven expeditions to Central America, and returned from each voyage laden with splendid spoils: bas-reliefs, statues and steles, sketches of great palaces and temples; mouldings of untransportable sculptures, documents of inestimable value, removed from the virgin forest with the patient tenacity of a man who never let go of an object before he had forced it to yield up its secret.

What was known of the Maya at that period came mainly from Spanish chronicles, and Maya texts which had escaped destruction by the conquistadores and received asylum in European libraries.

Legend claims that ten thousand years ago the Maya possessed an admirable civilization and that they civilized Egypt—whose inhabitants were then only transplanted Mayas. Specialists had been able to decipher the sacred texts, the Popol-Vuh and the Book of Chilam Balam in the codices, after patiently working out the meaning of each character. But mystery still surrounds the lives of this people though it was known that they founded great empires, the ruins of which were buried under the roots of the forests and the humus of dead trees. Maudsley undertook to free Maya buildings from the parasitic vegetation which enveloped them, and, in most cases, had split walls and broken down terraces by the irresistible pressure of trunks and branches. Maudsley was certainly not the only figure in this exploration of Central America. But it is because of his confidence, his enthusiasm, his faith and his unceasing activity that the book of Maya civilization is almost completely intelligible today, and the powerful and melancholy ruins of Uxmal, Copan or Chichen Itza can be visited with scarcely more difficulty than Saqqara or Angkor.

The Maya have not revealed their whole secret. Perhaps it is better so. It is good that even today an atmosphere of enigma and silence should still surround these monuments, which have been so well restored. Enough mystery remains in the historic destiny of the Maya, their thought and their art, to excite the imagination. And if it is now relatively easy to reach the buildings which Maudsley found clothed in earth, bushes, forests and lianas, towards which he had to clear a path with hatchet and pick-axe, no one can boast of having reached the most distant background where the secret life of the Maya is protected from the curiosity of modern man by numerous seals as difficult to break as those closing the book of the Apocalypse.

Where did they come from? Where have they gone? It is impossible to answer these questions, although the pyramids of Chichen-Itza are superficially as intelligible as those of Ghizeh; or rather, both retain all their mystery. All the material of Maya archaeology is today at our disposal, although unknown buildings can still be seen in insufficiently explored jungle, and aerial explorers sometimes discover ruins which nobody has yet been able to locate in the confused tumult of savage vegetation. We know the principal Maya towns, but Tulan, the holy capital, has disappeared and no one can say where its remains may be found. How many other magnificent cities of the old and new Empire may yet await a new Maudsley to reveal their treasures?

According to Luis Chavez Orozco[1] who bases his theories on the most probable conjectures, the Maya-Quiché race originated in a current of emigration from the north-west, possibly from the Mississippi basin. This seems even more probable when we examine the Maya buildings which were almost always erected on man-made hillocks, and recall the ancient mounds in the Mississippi Valley, where hills were erected in the shape of animals possibly to celebrate some unknown rites.

According to Orozco, on the other hand, Maya *culture* was autochthonous, that is to say, it was born when these tribes had settled in Central America. From the ethnic point of view, Orozco divides the Maya-Quiché into *huastecos*, Mayas and Quichés. Linguistically, they are grouped according to the following headings: Maya, Quiché, Tzental, Pokonchi and Mame.

Legends in the Popol-Vuh which tell of the creation of humanity, mention the ancestors of the four Quiché clans as Balam-Quiché, "the tiger with the suave smile", chief of the Cavek clan; Bala-Ayab, the "tiger of the night", chief of the Nihay clan; Mahuacutah, "illustrious name", chief of the Ahauquiché clan; and Iqi-Balam, the "tiger of the moon", chief of the Tamub and Illocab clans. These are the personages represented on the wild and mysterious bas-reliefs, whose symbols cover the façades of the palaces and the slopes of the sacred pyramids, with strange images of the gods of the Maya pantheon, to whom strange ceremonies and fantastic sacrifices were attached.

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[1] *Le Civilizacion Maya-Quiché*, Mexico, 1932.

There was the bird-serpent, Kukulcan, with fantastic arabesques of folds, scales and feathers; the god of the earth, combining the symbols of vegetation and fertility in its monstrous forms, along whose body the sun sailed during the night to meet the place of its resurrection in the morning; the god of death, an emaciated skeleton whose sneering skull was capped with a helmet of feathers; the god of rain, with a long tapir's snout and streaming eyes, symbol of the celestial shower; the god of the sky, Itzamna, who may have been a historic personage in that night of time, and led the first migration of the Maya—those eternal travellers—the stallion of the sky, who for some unknown reason is represented as old and toothless; the god of maize, the spirit of the beneficial plant with an eternally young face; the god of war, with bellicose tattooes and heavy club; the sun god, his front teeth filed, his open mouth breathing tropical ardour; the god of the wind, with long nose uncoiling in strange scrolls, according to Forstermann, signifying the breath of storm; the god of suicides, hanging by a cord round his neck, writhing in agony (although suicides were certain to go immediately to heaven to be welcomed by the goddess Ixtab—by virtue of which suicide was held as eminently praiseworthy and was in frequent use). And there are still other unknown gods, such as the one which archaeologists call God C, because they do not know his name or properties (Schellahs believes he was the god of the polar star), and Goddess I, with the face of an old lady, possibly the goddess of water. The procession of gods also includes all sorts of mythical animals, composite monsters made up of jaguar, serpent, tapir and crocodile.

Neither Etruscans, Sumerians, Hindus, nor Chinese can rival the Maya in the invention of monsters. It is not the whim of an artist imagining fantastic creatures, but the refinement of a high and subtle system of symbols which found allegories, signs and correspondences everywhere. Maya sculptors played with human and animal forms with dazzling virtuosity. When this art reached its baroque period, when buildings were covered with ornaments of violent dynamism, a monstrous life seemed to disturb the whole monument, making it throb and crawl in harmony with the immense bodies of the serpents.

The façades of the palaces and temples are prodigiously alive. Even abstract decoration has acquired the powerful sinuosity of the monsters. The letters of the inscriptions and the figures of the dates, represent human faces, sometimes of naturalistic truth showing the bizarre Maya ethnic type, with flat forehead, receding chin, projecting lips, and sharp nose, sometimes the faces of demons or monsters, bristling with defences, horns and claws. The figures move in terrible animation: number one is a face with a hand on the lower jaw, thirteen a fantaistc bird swallowing a worm, six a face with a hatchet in its eye, ten the skull of the god of death.

The hieroglyphics composing the letters of the days, months, years—chronology was the great preoccupation of the Maya—also swarm with grimacing faces, more or less stylized, haunting and obsessing the eye by their very frequency. These are not logical and human pictograms like the Chinese or Egyptian characters, which are so easily decipherable that the slightest clue is enough to explain the writing system. In Chinese characters everything is based on man, his attributes and activities, and objects are designated according to their connection with man. Maya hieroglyphics, on the contrary, present an arbitrary order of objects, divine symbols and enigmatic forms made even more agonizing by the feeling that all this is still penetrated with a subterranean life, a chaotic violence reminiscent of the upheavals of nature.

This crowd of monstrous figures, stretched out, inter-twined, twisted in arabesques, and knotted in decorative motifs, climb on façades, support buildings on bodies of erect serpents and frame scenes of sacrifice or ritual ceremony, the offering of smoke and the offering of blood, episodes of war and fabulous events borrowed from fantastic Quiché legends. These Maya ruins must have appeared most fearful and mysterious to the first Europeans who penetrated the jungle: seething monstrous forms moving and writhing in the débris of buildings split open by the pressure of the virgin forest, absorbed by the crazy growth of vegetation.

Archaeologists have reduced this chaos to order. They have deciphered the hieroglyphic inscriptions and thus worked out a fairly exact chronology of Maya history. They have cleared and re-erected the monuments, so well that today, as a result of recent efforts by the Mexican Government and the Carnegie Institute of Washington, Maya buildings can be studied in the same condition as at the time of the full prosperity of the Empire. Archaeologists have accomplished a veritable resurrection of dead cities. But this impression of intact monuments does not arise from improper reconstitutions or restorations. The architectural elements which time and the violence of tropical nature had scattered had only to be put in order. The Maya towns had not been destroyed, only abandoned. They did not suffer from the pick-axe and fire-brand of invaders. The temples were not used for the construction of neighbouring towns, as happened so often in Egypt or Mesopotamia. Lastly, they were not built of fragile brick but powerful stone. Because of this the buildings had suffered no injury other than the natural invasion of tropical forest which took possession of the places abandoned by man and within a few months had restored vegetation to the sites from which it had been driven.

Without wishing to diminish the merit of the archaeologists, which is immense and worthy of admiration and recognition, the task was perhaps less complicated here than in Mesopotamia, where superposed towns had ended by confounding ruins separated by millennia. All the elements of these buildings had remained *in situ*, broken and dispersed by the pressure of vegetation. It was sufficient to destroy the parasite vegetation and erect the ruined monuments again, to reconstitute the old Maya cities in all their strange and impressive magnificence.

In place of tottering buildings, there is a perfect order of consolidated terraces, resurrected walls and bas-reliefs back in place. At Chichen-Itza, the famous monument called the Caracol, the snail, which probably served as an observatory to astronomers, was reestablished in its original state a short while ago. The ball court could be used today; the ring through which the ball had to pass is still there, and the tiers have been reconstituted, where spectators formerly crowded, attentive, passionate, prompt to take flight, because the winner had the right to seize the clothing of all who had wagered against him and were not sufficiently agile to save themselves before the settling of accounts.

Whereas other nomads did not build anything which might attach them to any portion whatsoever of the soil, such as the Mongols of Central Asia and the Huns, for whom a chariot was sufficient as a fixed and settled dwelling, the Maya installed themselves in a place as if to stay the whole lifetime of the race. This spirit of laying down roots, combined strangely with the migratory sentiment, and resulted in the abundance and magnificence of Maya towns. Thus, although some sites show the remains of different monuments in the history of their civilization, generally a town belongs to a certain stage in their wanderings. There are no evolutions of culture in one place, as in Mesopotamian sites where the millennia pile up their remains, but rather evolution in space, in migrations from south to north, where the journeys of this strange race can be followed step by step.

The history of Maya civilization is generally divided into two periods: the Ancient Empire and the New Empire. "The Old Empire", writes Luis Chavez Orozco,[1] "flowered in the South, that is to say, in Tabasco and the Chiapas, the Department of Peten in Guatemala, and the western frontier of Honduras. We can admire the archaeological evidence of its splendour in the ruins of Copan,

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[1] *Op. cit.*, p. 28.

Quirigua, Tikal, Yaxchilan and Palenque, amongst the principal towns. The New Empire flowered in the North, in the Yucatan peninsula proper. We have the architectonic manifestations of this second period in the ruins of Chichen Itza, Mayapan and Uxmal. The Ancient Empire began its development five centuries B.C. and ended in the sixth century A.D. The New Empire began in the seventh century and lasted until the arrival of the Spaniards in the sixteenth century. The Maya-Quiché civilization therefore existed for twenty centuries."

S. G. Morley places the Ancient Empire as far back as 600 B.C. and distinguishes three periods. He calculates five in the New Empire. J. H. Spinden divided Maya history into a proto-historic period (from 325 B.C. to A.D. 160), an archaic period (from 160 to 455), the period of its great blooming (from 455 to 600), a period of transition (from 600 to 960), the period of the league of Mayapan (from 960 to 1195), the Nahua period (1195 to 1442—this is the one Morley calls Toltec), and the modern period up to the end of the Maya.

Maudsley, following the special chronology of the Maya (which will be dealt with later) divided the Ancient Empire into three periods: archaic—from the origins to 104—middle, from 104 to 202, upper—from 202 to 340. The New Empire extended from 340 to the fall of Maya as a state.

Basing his assumptions on the most recent works and discoveries, T. H. Gann[1] distinguishes six periods: the archaic period, which he says was "subdivided into two periods, during the earlier of which a migration probably took place of people in the archaic horizon from the high plateaux to the lowlands, from whom sprung the Chorti-Tzentals, progenitors of the Maya of the Old Empire. During the later period, which lasted till about the fifth century A.D., the earlier of the great cities, including Palenque, Copan, and Tikal, were built, the first being the art centre, the second the religious and scientific centre, and the third possibly the entrepôt of the budding Empire. During this period temples, palaces and dated monoliths were erected, the calendar system was evolved, the sciences of mathematics and astronomy were invented, art and architecture were born and flourished, and the foundation was laid of an extensive pantheon."

The second period, which Gann calls transitional, seems to have lasted for about a century and been characterized by great artistic progress, especially in sculpture. New towns appeared, of which the most important was probably Piedras Negras.

The "great period", according to Gann, lasted a century and a half, until the great towns of the Old Empire were abandoned and replaced by new cities in Yucatan. It was the summit of the art and culture of the Maya.

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[1] *Mexico*, London, 1936, p. 21.

Instead of passing immediately from the Old to the New Empire, like most archaeologists, Gann introduces a period which he calls "nomadic", intermediary between the abandonment of the ancient capitals and definite settlement in Yucatan. The nomad life of the Maya people during this period explains why few monuments, even few steles, remain. But the artistic virtues of the race remained intact and these flowered magnificently during the New Empire. This saw the foundation of the league between Mayapan, capital of the Cocomes, Uxmal, capital of the Xus, and Chichen Itza, capital of the Itzas. The league assured peace and prosperity to the Maya Empire until, six centuries later, internal discord destroyed harmony and resulted in the fall of the Maya. This period corresponds to what can be called the "baroque" period of Maya art, characterized by abundant decoration.

The last period of Maya history, which Gann designates by the epithet "Toltec", saw the decadence of the Empire, the intrusion of Toltec armies, called by the Maya princes, who then took possession of the country to the point of dispossessing its former masters. At that time, Toltec influence penetrated into the art and civilization of Yucatan and is clearly recognizable in the monuments of the period. Following the impoverishment resulting from the civil wars and Toltec domination, the great towns were abandoned and the Maya people were broken up into small vagabond tribes and disappeared from the history of civilization. By the time the Spaniards arrived their greatness was nothing but a memory.

To avoid complication it is advisable here to adopt the traditional division into Old and New Empire. This terminology indicates the importance of the break at the time of the great migration, but it must be understood that the deep unity in time of Maya civilization was not broken and the removal of the political and cultural centres in no way diminished the power and the beauty of its evolution. It was simply a change of milieu which, like all changes, obviously influenced the thought and art of the race, but left its profound characteristics and essential tendencies untouched.

The most ancient Maya town known is Uaxactun, in the northern part of the district of Peten in Guatemala. Some years ago Morley discovered a chronological stele, the date of which corresponds to the year A.D. 327, but excavations made at the site show the remains of long occupation, probably much before this date. It must also not be forgotten that although Uaxactun, because of this stele, appears to be the oldest Maya town, there is no proof that it was not preceded by others. Chronological steles may not have been used in the preceding periods, and it is certain that there must have been wooden steles before then, which, like all wooden objects (with some exceptions preserved at Basle and at the British Museum) have disappeared. Only the stone steles have survived disintegration from damp. Again, the discovery of steles made of soft stone and not engraved leads to the assumption that at that period dates were painted and not sculptured, which would naturally result in the disappearance of the inscriptions.

The excavations of 1928 produced the most useful information on the state of Maya civilization at this period. Documents were found which enabled the antiquity of Uaxactun to be placed as far back as the year A.D. 97 (but there is discussion on this point because here, as in Mesopotamia and Egypt, certain archaeologists hold to a "long" chronology theory and others to a "short"). It must be added that not all the inscriptions at Uaxactun have yet been completely deciphered. When this task is completed, the conclusions may verify the proof that the town existed nearly a century before our era. This would put back the antiquity of Uaxactun four to five hundred years beyond what is at present admitted.

The most beautiful monument of the old city is the pyramid, 50 feet high, which was excavated by Ricketson, who found a second pyramid contained in the first. This pyramid with its terraces and its wide stairways, with ramps decorated with enormous faces of monsters, is one of the most striking buildings of the Ancient Empire. The priests assembled at the summit of this monument (which served both as temple and observatory) on the highest terrace, painted red, to celebrate ceremonial ritual, make sacrifices and salute the rising sun. In fact, the archaeologists of the 1928 expedition observed that, according to the arrangement of the three neighbouring temples in relation to this pyramid, the date of June 21st, the summer solstice, corresponded to the moment when the sun rose behind the northern corner of Temple I. The spring and autumn equinoxes, March 21st and August 21st respectively, saw the sun rising exactly in the middle of Temple II. The sun appeared exactly at the southern corner of Temple III on December 21st, the day of the winter solstice.

Whatever its purpose, this monument is none the less striking, with the perfect architecture of its stone terraces, its covering of white stucco and its strange sculptures which some archaeologists consider not precisely Maya but pre-Maya. The antiquity of the site is testified to elsewhere by the remains of habitations found in the neighbourhood of the temples and pyramids, notably terra cotta statuettes and pieces of pottery.

Remains of private habitations are rare in the Maya countries. Built of wood, palms and beaten earth, they have generally disappeared without leaving any traces, while temples and palaces constructed of stone on artificial hills, escaped natural destruction. J. Eric Thompson in the *Civilization of the Mayas*,[1] cautions against using the word "town" in connection with the Maya. Contrary to what is found elsewhere, the Maya cities were not essentially centres of habitation but scenes of religious ceremonies, and perhaps also market places and legal centres. There was probably only a small permanent population of priests and civic leaders.

The pyramid discovered at Tikal, one of the most important towns of the Old Empire, is higher than that at Uaxactun, and with the temple surmounting it, measures 190 feet. Some steles in soft stone have been found at Tikal. These obviously bore painted inscriptions which have been effaced by climatic inclemencies. There are also some extremely interesting remains of stone sculptures which clearly show the influence of wooden sculpture. The wooden sculptures of the Maya are not known and it is curious to observe evidence in the bas-reliefs of Tikal, of a time when the first sculptors in stone, still ill-adjusted to the new technique and unaccustomed material, unconsciously applied their former habits of eye and hand.

The site of Yaxchilan, discovered by Rockstron, who called it Menché, is also of extraordinary richness. The name "Menché", related to the eponymous ancestor Bol Manches, which is preserved in the memory of the present natives, was continued by Maudsley, but Maler substituted the name of Yaxchilan, which in Maya means "green stones". Some archaeologists remain faithful to the name Menché, though Yaxchilan is generally employed today. It is therefore necessary to point out that they refer to one and the same town.

The buildings of Yaxchilan, notably the "red temple" and the "labyrinth", already present all the characteristics of Maya architecture, in particular the hollowed-out superstructure of two walls joining each other progressively, which gives such a strange appearance to these monuments. The Mayas did not know the arch in the proper meaning of the term and were only acquainted with an overhanging arch, examples of which are found in the temples and palaces of Yaxchilan. Because of the general plan of the city, which rises in terraces one above the other and the architectural ingenuity of its monuments, Yaxchilan represents one of the most curious sites of the Old Empire. Magnificent sculptured steles, amongst the masterpieces of Maya art, are well known. These bas-reliefs, of wild and mysterious grandeur, are extremely moving with their representations of priests making the offerings of blood, and gods appearing

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[1] Chicago, 1927.

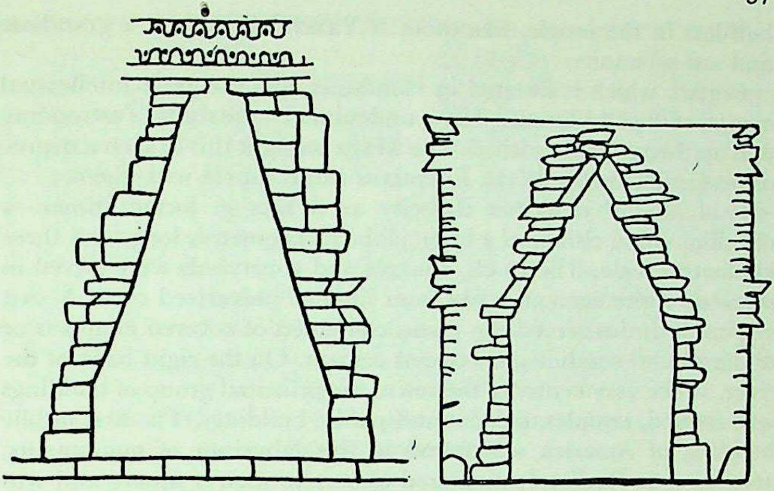

Fig. 18 Overhanging arches: left: arch at Uxmal, right: arch at Chichen Itza

in the midst of the coils of the serpent or zigzags of lightning. Maya sculpture, uniting vigorous naturalism to an imaginative spirit which enclose living forms in an inter-twining of abstract or stylized, symbolic and elusive figures, like those of the old Irish manuscripts, here created some of the most impressive productions, and also the most representative, of Maya religion during the Old Empire.

Palenque is one of the best-known towns of the Old Empire. Discovered and described by Maudsley, who brought back sculptures, mouldings and sketches, it is thought by many to be the most perfect example of Maya civilization. "The Temple of the Cross", in particular, has been examined and analysed several times as constituting, together with the red temple of Yaxchilan, typical buildings of the Old Empire. Apart from this, Palenque is famous for its reliefs and stuccos of extremely refined art. Of the twenty important towns known of the Old Empire, Palenque, one of the first towns to be explored, inspired one of the earliest visitors to the Maya ruins, J. L. Stephens (who studied them in 1840) to write this characteristic appreciation: "By their exactitude of proportion and symmetry, they come near to Greek models." Much else could be said, but Stephens' opinion is significant, considering that he saw these monuments in their ruined state. Palenque remains famous most particularly for its stuccos and paintings which, apart from the rarity of Maya paintings (the most interesting perhaps are on vases at Nebaj and Chama) merit aesthetic admiration. The Temple of the Laws, the Temple of the Cross, the Temple of the Sun, still half-lost in the jungle, like those of Yaxchilan, possess a grandiose and sad solemnity.

Copan, which is situated in Honduras, was the great intellectual capital of the Old Empire. Here, undoubtedly, the study of astronomy and mathematics flourished. The Maya brought this to such a degree of perfection that only the Egyptians can compete with them.

Paul Radin[1] describes the city as it was in former times—a dazzling vision rising on a large plain 12 kilometres long, and three kilometres wide. The roads, squares and courtyards were paved in stone or white cement made from lime or pulverized rock. A vast system of drains served the town, composed of covered channels or underground conduits, in stone or cement. On the right bank of the river, in the very centre of the town, the principal group of buildings was erected, temples, palaces and public buildings. The first public building of America was found in this labyrinth of monuments, according to Radin. It measured almost 70 metres square and was constructed so that it faced the four cardinal points. Inside the building, which was 18 metres high, was a courtyard 11 metres square. The whole ensemble must have presented an extraordinary sight. The courtyard itself was surrounded with rows of seats which rose in the form of an amphitheatre to a height of 36 metres and were constructed of great blocks of stone cut with precision and adjusted with regularity without the aid of mortar. In the centre of the western façade was a stairway, and to the north two magnificent temples. The inside walls of one of these were covered with a fine layer of stucco on which figures and scenes were painted in various colours. The cornices were decorated with stucco and ornaments in the same striking colours. Numerous grotesque figures covered the external walls of the temple and a very complicated cornice ran round the four sides, presenting a motif of feathers, admirably sculptured. Higher still, rows of busts which appeared to be portraits, went round the building. The northern wing of the central building, says Radin, presented a large pyramid and from the southern side, opposite the square, there rose a magnificent stairway covered with hieroglyphics which led from the square to the entrance of the temple at a height of 90 metres. It was decorated at regular intervals with seated human figures.

This prodigious stairway, with its jumble of hieroglyphics and its statues of gods and priests, has also been disintegrated by the subsidence of the land and by the trees which have driven their powerful roots between the wide sculptured stones. In the same way, the temple which crowned the upper terrace has disappeared, and today it cannot be determined whether it was solely devoted to

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[1] *Histoire de la civilizacion indienne*, Paris, 1935.

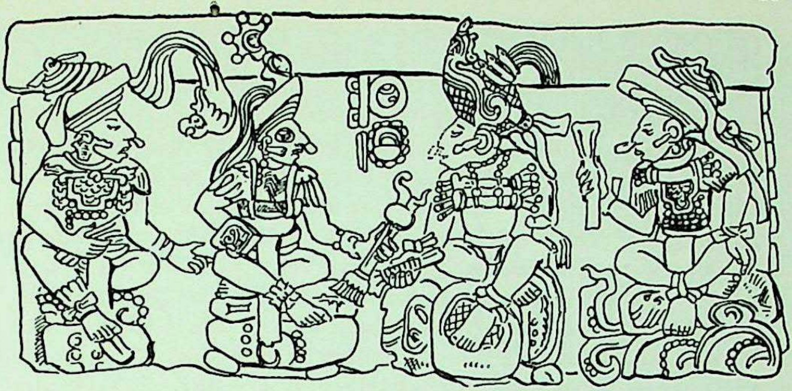

Fig. 19 Bas-relief from one of the sides of the altar at Copan, representing the astronomer-priests

religious ceremonies or also served astronomic observation. At Copan, the eye and imagination are obsessed by the numbers which cover all the surfaces. The statues and bas-reliefs are covered with these signs, combinations of which formed the dates so dear to the Maya people. It would seem as if these people used writing mainly to perpetuate chronological commemorations which were prodigiously important to them. Unfortunately, the events to which they referred are unknown. The Maya invented an extremely complicated system of chronology which has been analysed by Spinden, Morley, Gann and Thompson. The Maya year had 365 days or 260 days, according to whether the civil or the religious year was concerned. The day was called a *kin*; 20 *kin* formed one *uinal*; 18 *uinals* formed one *tun*; 20 *tuns* one *katun*; and 20 *katuns* (which gives a total of 144,000 days), one *baktun*.

We would not presume to give a résumé here of this delicate and complex system of enumeration, the subtlety of which cannot be grasped without sufficient familiarity with the curious Maya mind, all the efforts of which seem to have borne principally on chronology and astronomy. Besides which, the two are so closely united that it is possible by astronomic cross-checking to find the relationship to the European calendar, of certain Maya dates which would otherwise have been unintelligible.

Copan was the great astronomic capital of the Old Empire. All the stones in the town, as well as the steles lost in the forest, bear complicated calculations which form dates, immortalized by the sculptors who have engraved bizarre characters made up of faces of men, monsters or gods on these enormous monoliths. It is the same at Quirigua, where the jungle bristles with immense chronological

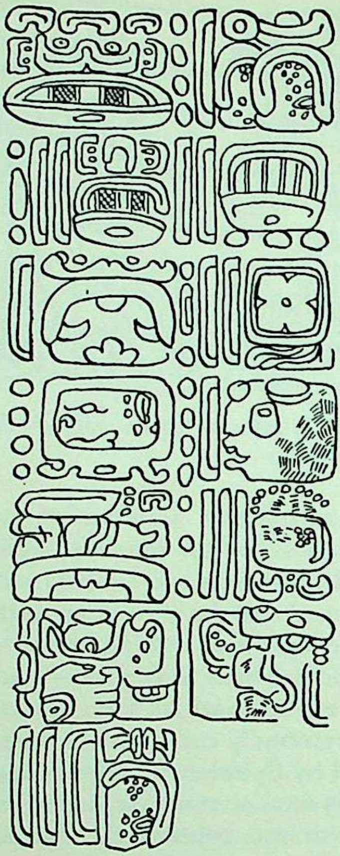

Fig. 20 Chronological stele from Naranjo

steles, sculptured in the solemn image of a divinity and also covered with dates. The rôle played by Copan in the scientific life of the Maya was shown by the discovery in 1926 of a collection of steles and altars which provided evidence of a great astronomical congress held in the town on 6 Caban 10 Mol, otherwise September 2nd, A.D. 503.[1] The whole collection of buildings called the "Acropolis of Copan", consisting of squares, courtyards, pyramids and stairways, which had grown up there during the four centuries the occupation of the town lasted, was unfortunately damaged when the River Copan changed course and began to flow through the middle of the buildings, causing the disintegration of the terraces and the ruin of the sculptures. On everything which remained intact, the chronological embroidery of characters can still be seen, so much so that the entire

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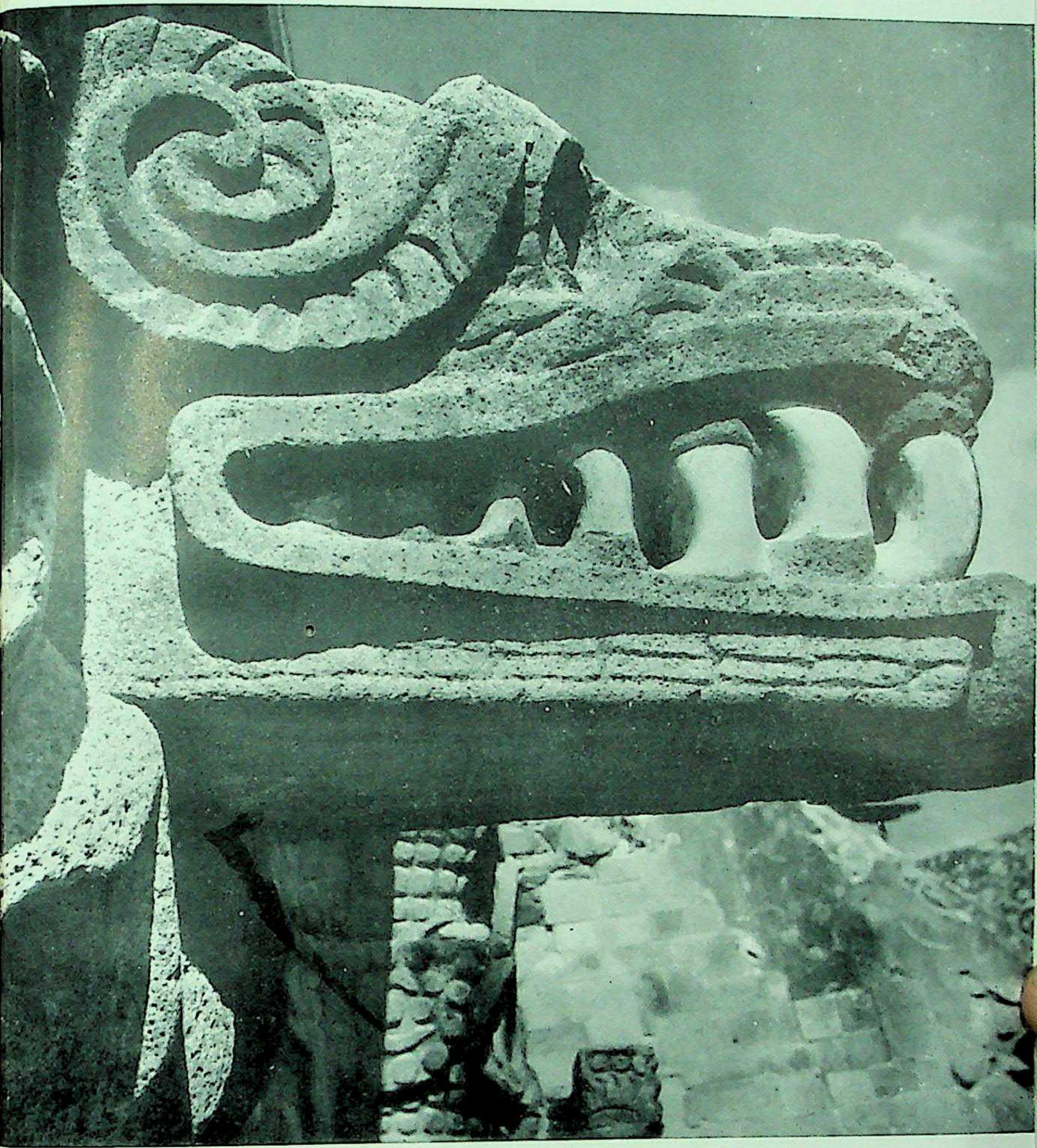
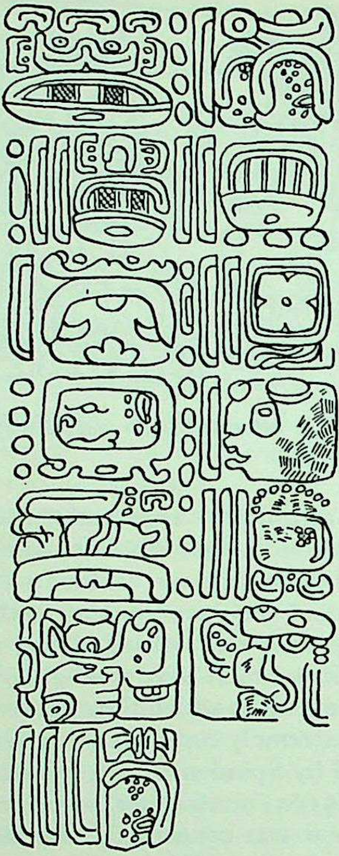
[1] See photos and commentaries by Thomas Gann in the *Illustrated London News* of September 11th, 1926.



Head of a serpent. Detail on the wall of the Temple of Quetzalcoatl, Teotihuacan culture



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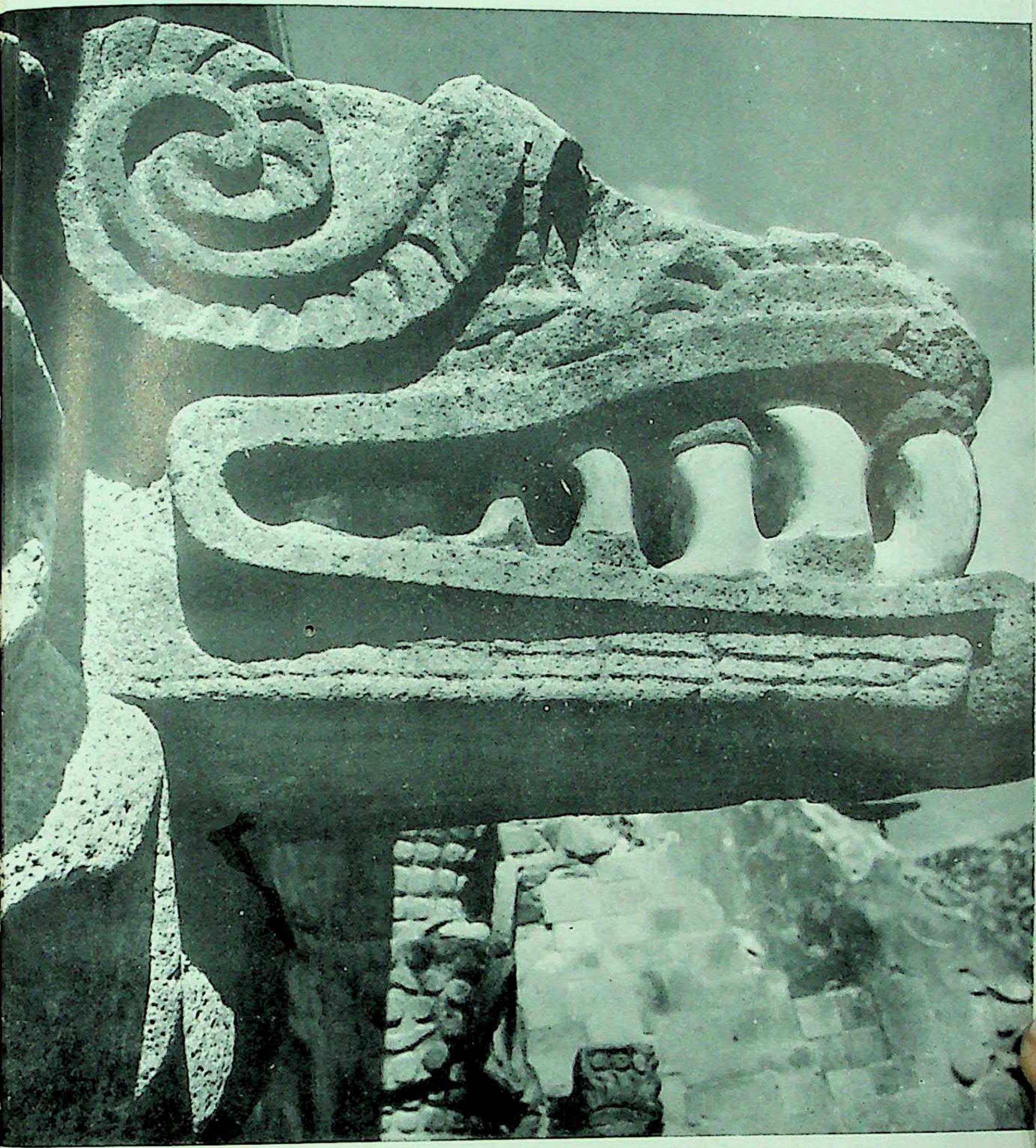
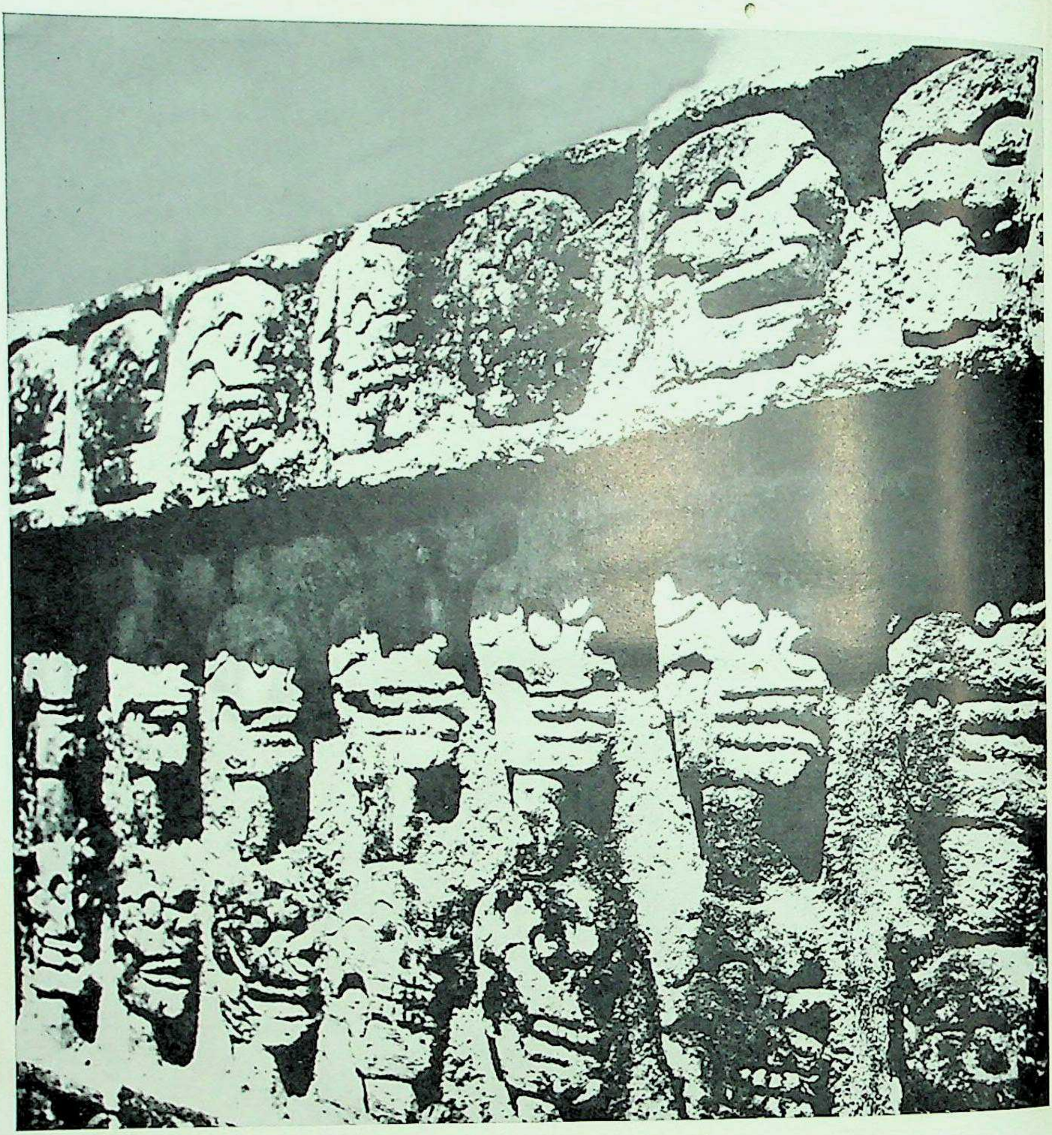


Head of a serpent. Detail on the wall of the Temple of Quetzalcoatl, Teotihuacan culture



Chichen Itza: frieze of skulls

city seems to have been nothing more than a gigantic calendar perpetuated in stone for some unknown enigmatic purpose.

The Astronomic Congress of 6 Caban 10 Mol is represented on an altar. The astronomer-priests are seen gravely seated in a circle, holding their instruments of observation and measurement, their faces raised towards the sky. These scholarly personages probably assembled to make a joint decision on some change in calculation which could not be done without taking the advice of the scientific authorities of the country and consulting the gods to find out if they were agreeable to the change. Spinden thought that the purpose of the congress at Copan represented on the altar was to move one of the witness-steles, a serious change which could only take place for serious reasons and after long deliberation. What was concerned, in fact, was nothing less than the determination of O Pop, in Maya chronology the day of the New Year, and of its coincidence with the first day of the agricultural year. It has already been stated that the civil year numbered 365 days; but as the Maya did not know of the intercalary days in use in the European calendar, there was always a time lag.

The discovery of two chronological steles on the summit of two hills, situated one to the east and the other to the west of the town, has confirmed this opinion. The two steles, bearing as usual a colossal sculptured figure accompanied by inscriptions, show the same date. These steles, known as Stele 10 and Stele 12, served for the observation of the sun. Spinden in fact noticed that from the eastern stele the sun set exactly behind the western stele 1 on April 5th by our time, the first day of the Maya agricultural year.

At first, writes Thomas Gann,[1] this date corresponded to April 5th of our year but later when the movable new year's day, known as O Pop, fell on April 9th, the stele was moved in such a way that the sun set behind it on April 9th instead of April 5th. It may have been to move the western stele slightly towards the north that the astronomers represented on the altar assembled on 6 Caban 10 Mol. This date does in fact recur with extraordinary frequency on monuments at Copan, on several occasions accompanied by representations of scholarly personages sunk in their astronomical observation and erudite discussion.

The Maya calendar is highly ingenious because, above all else, it tends to make the civil year of 365 days and the religious year of 260 days coincide. It rests on practical observations, notably on the determination of the solar year and the lunar year, while still being rooted in myth.

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[1] *Illustrated London News*, September 11th, 1926.

It is very curious, comments Radin,[1] that the period which possibly played the essential rôle in the Maya calendar depended on a purely hypothetical date, much earlier than the real beginning of Maya history. This point of departure was, he said, a definite day which marked the creation of the world. A date of great computation, it designated not only all the days which had passed since that point of departure, but also the name and number of the day bordering it, its position in the month, in the year of 260 days and in the cycle of the calendar.

However, Radin continues, the most admirable result of Maya astronomy was their calculation of the apparent revolution of the planet Venus, the basis on which they created the Calendar of Venus. They divided the synodic Venusian year, which numbered almost 584 days, into four portions: 236 days (star of the morning), 90 days (upper conjunction), 250 days (star of the evening), and 90 days (lower conjunction). These divisions are quite closely adapted to the real periods of the Venusian year. Apart from this, they were aware that eight solar years of 365 days each and five Venusian years of 584 days were of equivalent duration, and they used this fact both in their calculations and ceremonies. There is in fact every reason to believe that the small difference separating their Venusian year from the planet's true cycle, i.e. eight hundredths of a day, disappeared through the elimination of two days at the end of twenty-five revolutions. Finally, two brief examples are sufficient to indicate, Radin suggests, the astonishing exactitude of these calculations as well as their complexity, while giving some idea of the enormous numbers of years Maya astronomers often dealt with. In one of the famous manuscripts the question is raised of 405 lunar revolutions and although this error comprises 33 years, i.e. 11,959 days, the error according to the best modern methods is only nine-tenths of a day. This same manuscript represents the end of the world, after mentioning periods of 34,000 years (12,500,000 days) without the slightest hesitation. When time was completed, the serpent of rain would unfold across the sky and pour torrents of water on the universe. Vast rivers would flow both from the sun and the moon. Finally, the malevolent goddess of floods and clouds is represented overturning the cup of celestial water, while the evil black god, surrounded by symbols indicating the ruin of the whole universe, appears as an angry bird with a fearful head and uttering cries. These figures are vertiginous, and the feeling of vertigo increases still more, says Radin, if we remember that these people invented the zero and introduced it into their calculations possibly eight centuries before it was known in the Old World.

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[1] *Op cit.*, p. 48.

The Maya of the Old Empire attained such a high degree of civilization and built so many magnificent towns that it would seem as though they had come to stay for ever. Why then were these towns abandoned and why did their inhabitants emigrate towards the north, to the Yucatan peninsula? Of all the enigmas the history of the Maya offers, this is the least easy to solve. The secret of the Maya remains almost completely intact, despite all discoveries—for these only reveal superficial appearances. Everywhere, all the time, we find their dates; but in the majority of cases we still do not know to what these dates relate.

It does not seem as if the migration was sudden. Undoubtedly, the cities of the Old Empire were progressively abandoned following some centuries of incomparable prosperity. In the same way, the occupation of Yucatan would have been the result of slow infiltration, and not the disbanding of a clan on the march, as happened in Europe with the invasions of the Goths and Huns. It is in fact evident that the deserted cities were morally abandoned first, that is to say, left open to the invasion of the jungle through neglect, before all the citizens had left them to seek fortune or adventure in another region.

The region of Yucatan where they settled had none of the advantages normally attributed to the "promised land". It is obvious that after forty years' wandering in the Desert of Sinai, Palestine must have seemed a land of milk and honey to the Hebrews. But as far as the Maya were concerned, their new place of settlement was in no way preferable to the sites they left. Why therefore did they resume nomad life, after so carefully building magnificent temples and valuable observatories, to lay down roots in a not particularly hospitable country where they had to start building new cities at great labour all over again? The charms of Yucatan did not justify the journey. The country is hot and lacks water. It is overgrown with exuberant vegetation which they would have had to clear before beginning to build. It is not very fertile, populated with wild animals and dangerous insects. . . .

Maya scholars have put forward the most varied hypotheses to explain the great migration which interrupted the cultural life of the race and imposed all the difficulties attached to new settlement. They have mentioned climatic changes, invasions, internal struggles and intellectual exhaustion. Some invoke an epidemic of yellow fever which could only be escaped by moving. Others, studying the agricultural methods of the Maya, have discovered that these were rudimentary and so clumsy that they rapidly resulted in the exhaustion of the land and condemned the people to seek cultivable fields elsewhere. This at least is Morley's opinion—and it carries a great deal of weight.

Thompson invokes social changes, a revolt of the masses against the tyranny of the priests. The people grew tired of building immense edifices and nourishing a crowd of religious functionaries, and killed them or forced them to flee. This theory has in its favour the fact that the region remained inhabited by the people long after the religious buildings were abandoned. This then was the end of the great constructions; the end of the delicate astronomical observations! The people, left to themselves, would have returned to former barbarism, forgetting the art of sculpture and painted pottery. The last date sculptured in the Old Empire goes back to the year A.D. 600.

Finally, plagues of grasshoppers have been mentioned, which would have destroyed all agricultural cultivation, and forced the peasants to flee. Whatever the cause, the progressive or sudden disintegration of the former centres of the Old Empire resulted in the cultural death of all of that region of Honduras, Guatemala and the Mexican districts of Chiapas and Tabasco. All the efforts over so many centuries of generations of artists and scholars were annihilated. Gradually, the whole race moved northwards. Those who were not able or who did not wish to accompany the general migration, fell back into the savagery of primitive life, leaving the splendid cities of their ancestors. The forest promptly resumed possession, and they lay buried asleep amidst profuse vegetation, awaiting the resurrection performed by European archaeologists.

To follow the evolution of Maya civilization henceforth, Copan, Yaxchilan, Palenque and Uaxactun must be left to sleep in the silence of the jungle and we must turn northwards in pursuit of the travellers. We must neglect the cities we pass en route, which constitute steps in the great migration, because Maya sites are so numerous it would be impossible to study all of them and it would only be tedious to enumerate them. Instead, we will rejoin the tribe which Chilam Balam calls the Holy Men of the Itzas, at the point when they settled near a water course, subterranean water levels communicating with the surface of the soil by natural wells or pools called *cenotes*, which was to become the glorious capital of the new Maya Empire: Chichen Itza.

No more admirable and surprising collection of ruins can be found anywhere in the world, except perhaps at Angkor. Not long ago, these buildings—the Castillo, the Caracol, the Temple of the Tigers, the Ball Court, the Temple of the Warriors, the Chi-Chan-Chob and the House of the Nuns—were in a state of dilapidation. As a result of combined efforts by the Carnegie Institute and the Mexican Government, the ruins have been raised up and reconstituted. The bas-reliefs have been put back in place and the columns remounted. It was never necessary to add to or to re-make the buildings because all the architectural elements were found on the spot, disorganized certainly by climatic inclemency and vegetation but still sufficiently intact to resume their place in the complex ensemble of the monument. Thus a visit to Chichen Itza holds one of the deepest emotions a visitor can experience. Here he can contemplate not, as elsewhere, ruins which have been so well re-made that they appear quite new, but monuments preserved in their original state by a discreet and scholarly re-use of materials.

Chichen Itza takes its name from the two wells the Itzas discovered on their arrival. One of these was used for profane purposes, the other reserved for religious ends. The latter periodically received offerings of precious objects and human victims, probably dedicated to the divinities of the earth. Chichen Itza was in fact consecrated to Kukulcan, the bird-serpent, the prototype of Quetzalcoatl, the plumed serpent of the Mexicans. Kukulcan possessed a dual nature: celestial insofar as it was a bird, earth-bound as a serpent. In American religions as in Mesopotamia and probably all primitive civilizations of Asia and Europe, the serpent is always associated with chthonian divinities. Offerings thrown in the "wells of Itza" were presents for the chthonian serpent who represented the earth-bound nature of Kukulcan.

The sacred well of the Itzas is a place of striking grandeur. Long years of excavation in the pools by Thompson preceded the announcement of the discovery in 1923. As well as the treasures extracted, the presence of human victims is interesting because it marks the moment when a new spirit was introduced amongst the Maya, traditionally repugnant to human sacrifice. Previously, the gods were content with offerings of blood, which the priest or the worshipper produced by passing a small cord with sharp thorns across his tongue or the lobe of his ear. Numerous bas-reliefs of the Old Empire, notably those of Yaxchilan, show this strange custom. When the Spanish conquerors arrived at Yaxchilan, they felt terror and disgust at the sight of the priests clothed in black robes saturated with blood, their long locks of hair coagulated by blood. These were undoubtedly the officiants leaving the ritual offering. But as the Toltec influence spread to the Maya, this quite innocent sacrifice was considered insufficient and the gods, like the Mexican gods, claimed human victims. It was also claimed that if the victims thrown in the wells survived immersion for some time, they were solemnly extracted from the *cenotes* and interrogated by the priests as messengers of the gods, capable of interpreting their intentions and desires.

The different steps of Maya occupation can be clearly distinguished in the monuments at Chichen Itza. This occupation probably commenced in A.D. 530 and ended its first period in 668 when the Itza abandoned their new town to emigrate westwards, and built an ephemeral city at Chakanputun, in the State of Campeche. According to Orozco,[1] "there is only one monument at Chichen Itza which dates from this first period. It is a stone lintel with a date corresponding to August 28th, 619. Its condition on discovery enabled the date to be deciphered. The lintel was found at the entrance to a small temple in the south of the town. This fact and the condition of the ruins of the buildings in this part of the city leaves it to be supposed that the region was the oldest of the agglomeration."

After fire at Chakanputun in 944, the Itzas returned towards their wells and settled there afresh, definitely in 964. The apogee of the New Empire dates from this period until the Toltec period, which began around 1191 and lasted until 1440. The different buildings at Chichen Itza can easily be dated according to differences in style and technique. Those faithful to true Maya spirit and art are the Red House (the Chi-Chan-Chob), the House of the Nuns, the Akab Dzib, the Temple of Jacabal, and the monuments, in the absence of more precise identification, called the Temple of the Four Lintels, the Temple of the Two Lintels, and the Temple of One Lintel. Merriam has even managed to attach precise dates to these three buildings, i.e., 1155, 1014, and 1104 respectively.

The Toltec style, on the other hand, is clearly recognizable in all the monuments later than 1200: the Ball Court, the Temple of the Warriors, the Castillo and the Caracol, etc. Up to 1200 in fact, the Maya League, which grouped the Itzas of Chichen Itza, the Tutul Xiu of Uxmal and the Cocomes of Mayapan, called the League of Mayapan, assured prosperity and independence to the federation. Unfortunately in 1201, the king of Mayapan, Hunnac Ceel, on some futile pretext made war against the king of Chichen Itza, Chac Xib Chac, and called Toltec mercenaries into his service. The Itzas were beaten and reduced to semi-slavery. The Maya-Toltec monuments of Chichen Itza show several bas-reliefs presenting the Maya in a state of servitude or subordination to their new masters, the Toltecs. In the Temple of the Tigers notably, as Tozser has so well described, the Maya and the Toltecs are represented side by side during a ceremony in honour of Kukulcan—who is also beginning to resemble Quetzalcoatl. But, as on sculptured shields found in the wells by Thompson, conquerors and conquered are not only distinguishable by clothing, ornaments and ethnic type (the Maya

[1] Luis Chavez Orozco, *La Civilizacion Maya Quiché*, Mexico, 1932, p. 35.

always have the characteristic profile of flattened forehead, drooping nose and receding chin—often obtained by artificial means, in the same way as children were made to squint, which was very common, by making a lock of hair hang in front of their eyes), but also by attitude: proud and menacing in the case of the Toltecs, humble and frightened for the Maya, who are shown crawling in the dust at the feet of their new masters.

The buildings of the Maya period proper still to a large extent retain the characteristics of the art of the Old Empire. The House of the Nuns with its impressive façades and its diffusely decorated annexes, recalls the temples of Yaxchilan. "It is", writes Babelon,[1] "a bare block of masonry on which two storeys of rooms are erected, decorated with sculptured masks, deformed a hundredfold, grimacing on the façades. The little temple known as the 'Iglesia' rises nearby with its three doors opening into a smooth wall. In the corners, columns are fitted into the masonry. A massive entablature unfolds above, its lattice work interrupted by five groups of four columns. At the summit, a bare flat arch surmounts a narrow cornice with spaced-out rafters, flanked by frenzied masks whose nasal appendages unroll in the form of turned-up trunks, strangely profiled against the sky. These representations of the 'god with the long nose' have affected the imagination of some archaeologists, who have concluded that the Maya knew the elephant. From there to claiming that, at remote periods, relations existed between Yucatan and the Indies is a short step which was easily taken. But this needs too much imagination, or gives too little credit to the creative fantasy of the sculptors of Chichen Itza or Uxmal." The Chi-Chan-Chob or Red House is an almost bare rectangular building with steps, only bearing the decorative roof comb with lattice work which is also found in the Old Empire.

The Maya-Toltec monuments offer a most impressive spectacle, particularly today when work by Mexican and American architects has re-built them in their entirety and splendour. The mysterious circular building called the Caracol,[2] the snail, was nothing formerly but a mass of débris buried beneath luxuriant vegetation. Today, the Caracol, its terraces, stairways and neighbouring buildings are completely cleared and present one of the most astonishing examples of Maya architecture. To assess the activity and methods of archaeologists during latter years, it is useful to compare photographs taken before, during and after their work, which can be found in the volume *Monumentos arquelogicos de Mexico* (Mexico, 1933). The Temple of the Tigers, or of the Jaguars (no tigers exist in America), with its massive entablature, bristling with sculptures, resting on enormous pillars in the shape of erect serpents, their heads flattened against the soil, their tails supporting the entablature, is in a state of perfect preservation. It is necessary to refer to photographs taken before the restoration to appreciate the true value of the work of the architects.

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[1] *Vie des Mayas*, Paris, 1933, p. 114.

[2] On the subject of the Caracol, see Ruppert, in the *Carnegie Memoirs*.

"The wall of the lower chamber is decorated with bas-reliefs representing a procession of Toltec warriors painted red, green and yellow, whose feathered features, shields, arms, head-dresses and sandals can be observed at leisure. Painted stuccos decorate the various chambers, representing scenes from civil or religious life; fishermen sailing their canoes, musicians, priests, gods."[1]

The Temple of the Warriors was equally dilapidated before the Carnegie Institute undertook its restoration in 1925. The work, which is now almost completely finished, enables the extraordinary magnificence of the building to be judged. Its several storeys are bounded by fantastic bas-reliefs and preceded by propylaea with columns formed by enormous erect stone serpents like nightmare monsters. Babelon gives a vivid description:

"The sanctuary rests on a built-up pyramidal foundation, covered with stone ornaments, decorated with friezes of animals, birds and warriors. A steep stairway gives access to the upper platform, flanked by stone balustrades representing plumed cobras, their heads raised to the summit, their tails with rattles spread out at the bottom of the steps. Two columns depicting plumed serpents, their mouths gaping at ground level, their tails erected to a height of fifteen feet, divide the entrance of the temple into three doors. Square columns have been erected in a line on the esplanade which the pyramid overlooks, entirely covered with sculptures composing a sort of immense portico, suggesting a market or a basilica. The walls of the temple were covered with paintings analogous to those at the Temple of the Tigers; these have been restored with the greatest possible care by Miss Ann Axtell Morris who has made a profound study of them. Even the warriors sculptured in the sandstone of the columns in flat bas-relief, were painted. An altar supported by Atlantes crouching under a stone table was found in the Temple of the Warriors."

The Temple of the Warriors was excavated in 1929 by Earl Morris of the Carnegie Institute who, by hollowing galleries in the mass of masonry, discovered the existence of a much older temple enveloped in the construction of the present one. There he found a stone vase containing the bones of birds, a jade ball, a necklace and particularly an admirable mosaic of turquoises, the beauty and refinement of which (it consists of over 2,500 pieces) makes it one of the most exquisite masterpieces of Maya art so far known. Excavations at Chichen Itza have led to the identification of bas-reliefs said to be from the Temple of the Bearded Man and the restoration of the Ball Courts. Valuable discoveries in various buildings made by driving wells or galleries into the mass of the construction must also be noted. Thus, Mexican archaeologists found traces of an earlier building in the Castillo, the most imposing pyramid with steps at Chichen Itza and a considerable treasure house of sculptured stones, jade, obsidian, turquoise and red shell as well as a jade mask with a striking expression, a mosaic plaque and various ritual instruments magnificently executed in silex.

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[1] *Op. cit.*, p. 116.

The Illustrated London News of July 3rd, 1937, contains photographs of the very curious bas-relief of the Bearded Man, closely studied by the Mexican archaeologist, Miguel Angel Fernandez, and described by Enrique Juan Palacios, who has identified the bas-relief as a religious ceremony in honour of the solar god and Kukulcan to obtain rain for the harvest. Here, in fact, was one of the most important points of Maya ritual; most of the gods, the god of maize and the god of rain, are gods of fertility, and the bas-relief which decorates the base of the seats in the Ball Court corresponds to the same purpose.

This confirms what was already supposed, i.e., that the ball game was not only a sport but also a sort of religious game, like the bull game in Crete. The presence of the seven serpents indicates in fact that it concerned an agricultural rite, not strictly Maya, but strongly influenced by Toltec and Aztec ideas. This is emphasized by the fact that these bas-reliefs also show representations of human sacrifice which, as has already been said, was not in the old Maya traditions, and marked a contribution by the invaders. As César Lizardi Ramos has pointed out, the Mexican goddess of agriculture was called Chicome Cohuatl, which means the "seven serpents". The presence of these reptiles at Chichen Itza proves therefore that the Aztec-Toltec beliefs had strongly modified the softer and less sanguinary ancient Maya religion.

The Ball Court has been restored for some years. It was totally reconstituted following the discovery of a heavy monolithic ring through which the ball had to pass. This ring was put back in place and not only enabled the ball court to regain its original appearance but also made it possible to date the building with precision. By deciphering the inscriptions engraved on the stone, it was calculated that the court was built in 1367, that is to say, shortly before the collapse of the Maya Empire.

Finally, in 1937, the mass of masonry constituting the 70-foot high pyramid on which the Temple of Kukulcan (also called the Castillo) rises was hollowed out and the ruins of an ancient temple absorbed in the foundations of the new building discovered. It was composed of two small rooms. In one of them, the Mexican archaeologists, Manuel Circrol Sanzores and José Eroza Peniche found the statue of a man lying in the position called Chac Mool, possibly a solar god, in strange and simple style. The second room contained a still stranger effigy, one of the joys of Maya art. It is a statue of a jaguar in stone, painted red and incrusted with pieces of green jade to represent the spots of the beast. Eyes of green jade shine with ferocity and the mouth is open in a fearful rictus, equipped with real jaguar teeth. This astonishing statue served as an altar, and the circle of turquoise mosaic on its back holds the remains of the last ceremony celebrated in the little temple. Then workmen came to fill it with stone and wall up the door which was to remain unknown until the modern scholars came. This last sacrifice consisted of the burning of incense, which has burnt the mosaic disc, and in an offering of jade and coral jewels. This was the ceremony of the desecration of the temple, before the incorporation of the little sanctuary in the mass of the new temple.

Chichen Itza was not the only important town in the New Empire. Uxmal, one of the influential cities of the League, almost rivalled it in richness and splendour. The Pyramid of the Soothsayer is strange in its rectangular shape, with rounded corners. It possessed two temples, one halfway up, the other on the terrace. "The house of the Dwarf and the Devil", says Babelon,[1] "is said to have been built by sorcerers in one night. A dwarf is supposed to have lived there, born from a bird's egg. He became king of Uxmal because he played the magic cymbalum. A mask with a gaping mouth, perched on top of a steep mound, covered with bushes, served as door to this fabulous palace." The façade of the House of the Nuns, decorated with interlaced geometric ornaments, gives the impression of an enormous basket, so much do these decorative motifs seem to have been borrowed from basket-work. It was here that the sacred virgins lived. The Palace of the Governor is decorated in almost the same fashion with sculptured Greek key patterns and arabesques where figures of monsters are seen running, or interminable writhing serpents climb, disfigured into prodigiously ingenious stylizations, with curious triangular-shaped doors, resulting from ignorance of the arch. The Casa of Las Palomas or the House of the Doves, was so named because of its amusing resemblance to a pigeon-house, with its fretted decoration.

The ruins of Sayil are strangely reminiscent of ancient architecture

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[1] *Op. cit.*, p. 119.

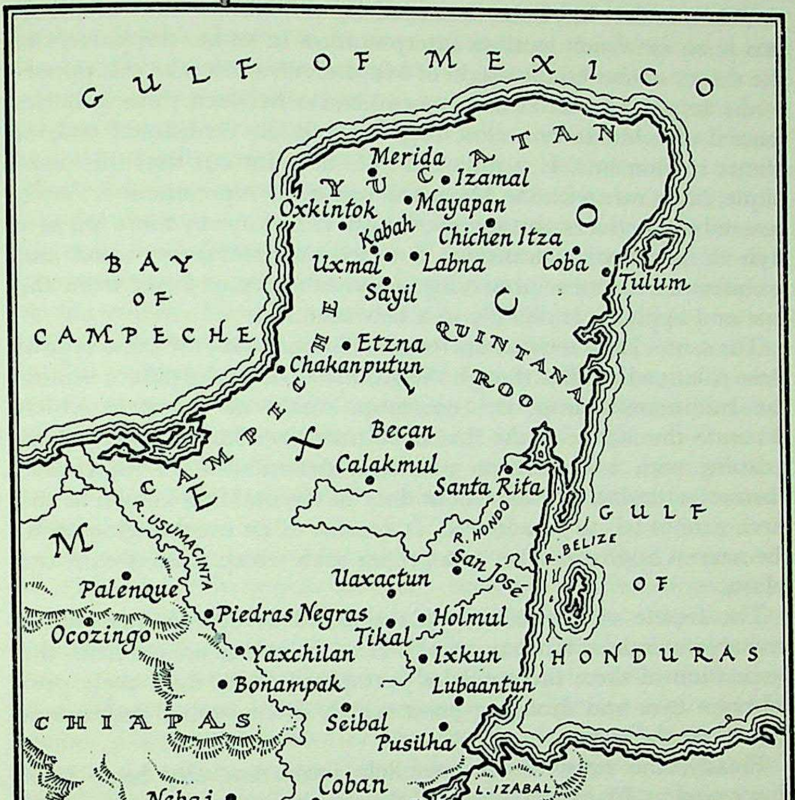
GULF OF MEXICO
YUCATAN
Merida
Izamal
Oxkintok
Mayapan
Kabah
Chichen Itza
Uxmal
Labna
Coba
Tulum
Sayil
BAY OF CAMPECHE
Etzna
Chakanputun
QUINTANA ROO
CAMPECHE
MEXICO
Becan
Calakmul
Santa Rita
R. HONDO
R. USUMACINTA
R. BELIZE
GULF OF HONDURAS
San José
Uaxactun
Palenque
Piedras Negras
Holmul
Ocozingo
Tikal
Yaxchilan
Ixkun
Bonampak
Lubaantun
CHIAPAS
Seibal
Pusilha
Coban
L. IZABAL
Nebaj
Quirigua
GUATEMALA
HONDURAS
Utatlan
Copan
Kaminaljuyu
MAYA CIVILIZATION
THE PRINCIPAL ARCHAEOLOGICAL SITES
SCALE 0 50 100 150 200 250 MILES
LP

Fig. 21 Map of the principal Maya sites

in wood, which has been destroyed by the climate and of which this is an extremely curious interpretation in stone. Supporters of the theory of the Asiatic origin of Maya civilization take this opportunity to point to the striking resemblances between these galleries formed of columns very close together and the traditional style of khmer monuments. It is sufficient here to point out that this technique, fairly rare with the Maya and especially represented at Sayil, certainly reproduces prototypes of wood. Here anyway there is a new style of intermediate transition between architecture in wood and architecture in stone, preserving the vocabulary of forms from the first and applying it skilfully to a new material.

The same characteristics are found at Labna, with the same type of close colonnading. But though the ground floor of the palace retains the traditional stamp, the enormous masks of monsters which decorate the façade of the first floor transform fearful gaping jaws bristling with teeth into a geometric deformation of impressive abstract austerity. The enormous door in the building known as the Arch cannot fail to be admired. It consists of an overhanging arch, the nearest approximation to a proper arch which existed with the Maya.

The façade of the ruined palace found at Kabah presents a veritable mosaic of fantastic masks. It is difficult to escape from the fascination of these thousands of juxtaposed faces, with their protuberant eyes and drooping noses which shoot ironic, malevolent glances at the visitor.

Finally, the ruins of an extremely important city have been discovered at Etzna. Babelon rightly points out its fascination and mystery. "An acropolis stood there", he says, "500 feet long, accompanied by five temples arranged around a vast square. The principal temple had five storeys, a sanctuary crowned the summit, with two rooms surmounted by a 15 feet ornamental wall. A wide stairway led from the square to the fifth storey, and one of the steps was decorated with a fringe of hieroglyphics. Another temple was turned towards the sunset; opposite, sixteen sculptured monuments are still standing and, for half a mile around, the forest bristles with constructions. In the Casa de la Muecca, seventeen sculptured monuments have been found on the side overlooking the courtyard, figures of chiefs, priests or warriors, magnificently clothed, with head-dresses of feathers, decorated with necklaces and bracelets, and standing on naked captives."[1]

Two Maya sites are of exceptional fertility. Holmul, in Guatemala, explored by Merwin, has produced remarkable pottery, from which sequences have been determined enabling specialists to speak of

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[1] *Op. cit.*, p. 120.

Holmul III as of periods well defined in Maya civilization. And Noh Mul, in British Honduras, at the confluence of the Rio Nuevo and the Rio Hondo, has been excavated by Thomas Gann.

Noh Mul is especially characterized by a collection of tumuli of heights varying between 6 and 100 feet. Thirty of these tumuli have brought to light very different constructions. Some represent tombs where the dead person was laid on the soil and covered with a barrow of earth, or buried under the stucco paving of the house where he lived during his lifetime. There are also more complicated sepulchres with superposed cells built of stone, the lowest occupied by the corpse. Finally, other tumuli do not seem to have served funeral purposes at all because no corpses have been found there. In this category are hillocks erected upon ruined temples for an unknown reason, those which constituted the sub-structure of houses which have disappeared, and finally, the type of artificial hill which probably served religious ceremonies because large quantities of broken clay censers decorated with strange human figures have been found there.

Judging by the funeral furnishings discovered in the first category of tombs, it would appear that they belonged to a recent period of the New Empire—what English specialists in Maya archaeology call the Re-occupational Period. They can be dated at around A.D. 1500 and, from the shape of the skull, the corpses seem to belong to a different race from that generally found in the tombs of the region. The corpses buried in the second category of sepulchre go back to an earlier period. They have been buried in the position called "in extension", that is to say, stretched out, their arms against their bodies, while those in the third category of tomb have been placed in stone urns, either in extension or in flexion. The pottery placed in these stone urns fully resembles that which Merwin discovered at Holmul, and belongs in the order of sequence to the period of Holmul III which, according to the Temple-Thompson chronology, generally admitted today for Maya history, corresponds to the period called Peten (from A.D. 300 to 700).

The last categories of monticule are not funerary. They nevertheless produced very valuable objects: silex sacrificial knives, vases decorated with paintings and figures in relief, and above all, a large quantity of incense vases, formerly polychrome, all of which have been found broken. This custom is explained when compared with a procedure used today by the Indians of Guatemala. On certain feast days, a religious ceremony is celebrated during which all the censers used for the cult are broken. This tradition goes back to the most ancient periods of Maya history and the discoveries of Noh Mul are proof of the bonds which still exist between the ancient

Maya and the present-day natives. These ceremonies are always celebrated at the same place, formerly on artificial heights, today on natural hills, so that the pile of broken censers increases from year to year and the débris is the joy of archaeologists today.

Amongst the most curious discoveries at Noh Mul is a piece of jade sculptured in the shape of a head. This was contained in a shell of the *Spondylus americanus* type, which served as a box—this has also been found at Copan and Toledo.

Etzna, situated in the State of Campeche, probably belonged to the Old Empire—it is dated at the fourth century A.D. But it is still difficult to be precise. We can be no more positive regarding the remains at Lubaantun in British Honduras, which have been the object of active excavations. A British Museum expedition in 1928 brought to light admirable pottery and masks with terrible and tragic expressions in the part of Honduras near the Guatemalan frontier, between the rivers Joventud and Pusilha. One of them particularly has a very disquieting appearance. A native workman discovered it in a tomb and wanted to keep it to himself so he took it away to his cabin. A fearful earth-tremor occurred on that particular night, and the thief, persuaded that the monstrous face had unleashed the cataclysm, hastily took it back trembling to the archaeologists of the English expedition.

Amongst recent discoveries which enrich and modify our knowledge of the civilization and culture of the Maya, two particularly retain the attention: the tomb of the Pyramid of the Inscriptions at Palenque and the frescoes of the Temple of the Tigers at Bonampak.

Until very recently, those archaeologists opposed to attempts to find an absolute analogy between the pyramids of Egypt and those of Yucatan pointed to the fact which until then was perfectly true, that the Pyramids of the Nile Valley were tombs whereas the Maya pyramids were temples and never contained sepulchres. Fortunately we are still far from penetrating all the secrets of the Central American races, and our assertions—however assured and well founded on facts and documents they may be—can be invalidated from one day to the next by new discoveries. Those made by Alberto Ruiz Lhuillier at Palenque in 1949 and which he brought to a conclusion in 1952 reversed this opinion of the Maya pyramids, or at least made it necessary to modify it. Certainly, it is not sufficient that one tomb was found under the Pyramid of the Inscriptions to be able to say that this type of building was funerary, as in Egypt. The purpose of the Maya pyramid was not to serve as a sepulchre. If an important personage, prince or priest, happens to be buried under the temple at Palenque, this only proves that they could shelter a corpse in exceptional circumstances, we think, and for reasons which it is impossible to define.

However, the discovery by Lhuillier is of capital importance because the remains of an unknown personage have been found intact in his underground funeral chamber where he had found sanctuary. Access to the vault curiously resembles the arrangement in Egyptian pyramids intended to lead astray malevolent intruders wanting to pillage the tomb. A stairway with an overhanging arch, leaves the vestibule of the temple situated on the summit of the pyramid, crosses it, and after certain detours and some landings, ends at a depth of 80 feet below the level of the temple and 7 feet below the floor of the pyramid in a sepulchral chamber whose orientation and dimensions certainly correspond to a magical or symbolic order of preoccupations. Offerings had been buried in the corridor leading to the funeral chamber, three clay plates, three shells, eleven jade stones and one pearl, enclosed in a stonework chest. Stranger still is the vault situated quite near the entrance of the chamber proper, which contained six corpses, one the corpse of a woman; probably servants who were sacrificed so that they might accompany the deceased in the hereafter. This feature relates the Pyramid of the Inscriptions to archaic Chinese tombs and to the royal cemetery at Ur in Mesopotamia where similar funeral practices were observed.

The first question which occurs is this: was an underground cavern beneath the temple used for the tomb of the unknown personage or was the temple intentionally built above the tomb? Professor Rivet, whose high authority is appreciated, has answered this question in his *Maya Cities*,[1] where he describes Lhuillier's really sensational discovery: "The fact that the sepulchre was found below the level of the soil on which the pyramid rests, the considerable weight of the sarcophagus and the slab which covers it, prove that the body had been buried before the pyramid was constructed and that its construction was determined by the especially sacred character of the priest or chief buried in the sarcophagus. The monument at Palenque must therefore have been essentially a funeral monument. It is obvious that it would be reckless to generalize this interpretation and to extend it to all the Mayan pyramids. Certain people will not fail to be tempted by this dangerous anticipation."

It took archaeologists three years to clear the stairway descending from the platform of the temple to the underground chamber. In 1952 they finally reached the vault itself. Its walls were covered with stucco bas-reliefs, a technique in which the Maya attained extraordinary technical and aesthetic perfection. The archaeologists then found themselves face to face with the enormous monolithic sarcophagus closed by a slab decorated with hieroglyphics, some of which reproduced a date which corresponds, in the Maya calendar, to the year A.D. 633. A figure of a man was sculptured in the middle of the slab, possibly the portrait of the deceased. "A man covered with jewels, his torso bent sharply forward, resting on a large mask which represents the god of the earth, death. He is staring at a cruciform motif which stands above him. This is probably a symbolic representation of life and is surmounted by a quetzal, while a two-headed serpent with small mythological beings emerging from its mouth undulates on the branches of the cross." This bas-relief is in the same style as the splendid and larger-than-life figures of priests decorating the stucco walls.

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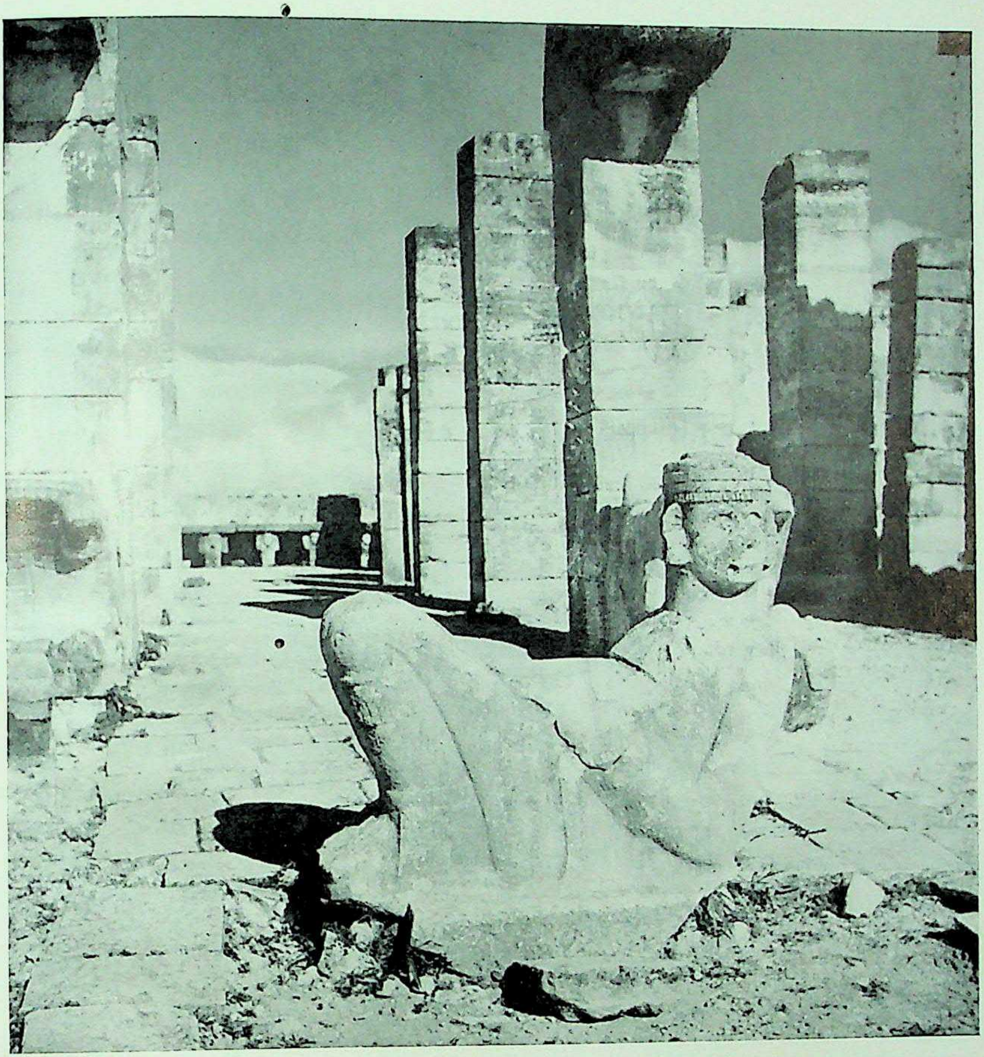
[1] Elek Books, 1959.

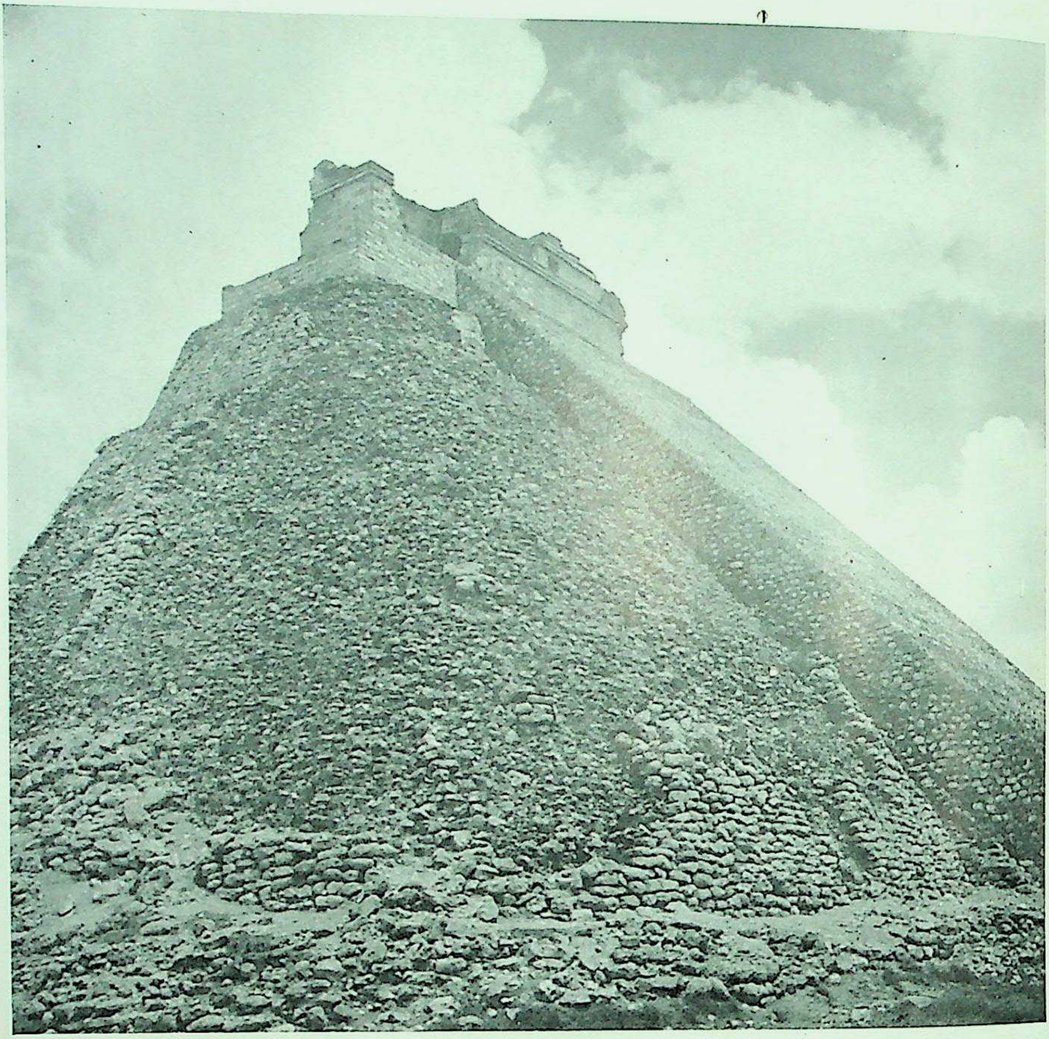
In November, 1952, the lid of the sarcophagus was finally lifted and a skeleton seen lying on its back. The sides of the sarcophagus were painted red; it can be recalled that already in European prehistory skeletons were covered with powder of ochre or red paint, possibly to recall the colour of blood, the very principle of life, or maybe the brilliance of the sun. A mask of mosaic lay on the face, comparable to those which existed in Mexico; the deceased was also wearing precious jade jewels. Admirable human heads in stucco, also painted red, of impressive gravity and comparable to the more beautiful masterpieces of Maya sculpture had been buried under the coffin itself. Were they images of gods, replacements for human victims, effigies of the deceased? We do not know.

Professor Rivet rightly draws attention to a very strange detail revealed by the funeral crypt of the Temple of the Inscriptions and which shows curious beliefs regarding life beyond the tomb, beliefs also found with other American races. Professor Rivet, who says that he experienced, "one of the greatest emotions of his scientific life", when he visited this tomb, remarks that, "A serpent modelled in clay emerges from the sarcophagus, mounts the length of the entrance stairway to the crypt and at the threshold turns into a sunken moulding which takes the exact shape of the steps of the stairway to end at the upper slab. Although this 'tube' does not penetrate into the sarcophagus, it can be envisaged as serving to establish permanent contact between the dead and the living."

This curious apparatus goes back to the primitive idea that the dead needed food; it was for this reason that in ancient times funeral furnishings were left near the corpse, together with food, and libations and offerings were periodically made on the sepulchre. The custom of giving flowers, which has remained in such general use in our own time, may come, certainly unconsciously, from the



Chichen Itza: the Chac Mool, Temple of the Warriors



Pyramid of Uxmal

idea that the spirit, like the butterfly—that butterfly which became Psyche the symbol of the human spirit—lives on the perfume of flowers or, more simply, loves to smell them.

The existence of a passage joining the interior of the tomb and the sepulchral crypt and enabling food to be introduced, is therefore also found in the Maya world and this is one of the major revelations of this sepulchre. Here also the cultural relationship between the Maya and the Indians of Ecuador for example, where similar customs have been noticed, can be seen. "Amongst the ancient Cara of the Quito region (Ecuador)", Professor Rivet writes, "the custom existed of placing in the mouth of the corpse, once it was in the grave, a bamboo tube. The end of the tube came out of the ground and into it the widow and relatives would pour chica from time to time. With the Colorado Indians from Ecuador, a string is tied around the body of the buried corpse and its end attached to the roof of the little shed which protects the sepulchre. It is by this means that the spirit departs. If the strings breaks when pulled, the meaning is that the spirit has flown."[1]

Only one fresco, at Uaxactun, is known from the first period of the Maya Empire, from 320 to 633. Most other Maya paintings, those of Chichen Itza, Chacmultun and Tulum only date from the New Empire, from 987 to its destruction by the Spaniards with the massacre of the last Itzas in 1697. The prodigious frescoes at Bonampak, discovered in 1946 by Healey, today constitute the most complete and best preserved collection of this artistic technique of which so few remains still exist. The rare Lakandon Indians who still live in this region of Yucatan, and who earn a meagre subsistence by gathering chicle gum for the Americans to use in the manufacture of chewing gum, are the descendants of those people whom the anonymous artists of Bonampak represented in the Temple of the Tigers. This dates from about 750, that is to say, it corresponds to the beginning of the third period of the Old Empire. These frescoes have been described by Agustin Villagra Caleti, *Bonampak, la cuidad de los muros pintados*,[2] but excellent reproductions can be found in *Maya Cities*, already cited several times, and which should always be referred to to answer any question relating to the art, civilization and religion of these people.

Sixteen feet high and 50 feet long, the Temple of the Tigers consists of three chambers with overhanging arches, completely covered with great compositions painted in frescoes on a layer of limestone, which are admirably well preserved. The colours have retained their freshness and lustre, and these episodes taken from the ceremonial life of priests and chiefs are truly astonishing and

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[1] *Op. cit.*, p. 138.

[2] Published in Mexico in 1949.

Pyramid of Uxmal

idea that the spirit, like the butterfly—that butterfly which became Psyche the symbol of the human spirit—lives on the perfume of flowers or, more simply, loves to smell them.

The existence of a passage joining the interior of the tomb and the sepulchral crypt and enabling food to be introduced, is therefore also found in the Maya world and this is one of the major revelations of this sepulchre. Here also the cultural relationship between the Maya and the Indians of Ecuador for example, where similar customs have been noticed, can be seen. "Amongst the ancient Cara of the Quito region (Ecuador)", Professor Rivet writes, "the custom existed of placing in the mouth of the corpse, once it was in the grave, a bamboo tube. The end of the tube came out of the ground and into it the widow and relatives would pour chica from time to time. With the Colorado Indians from Ecuador, a string is tied around the body of the buried corpse and its end attached to the roof of the little shed which protects the sepulchre. It is by this means that the spirit departs. If the strings breaks when pulled, the meaning is that the spirit has flown."[1]

Only one fresco, at Uaxactun, is known from the first period of the Maya Empire, from 320 to 633. Most other Maya paintings, those of Chichen Itza, Chacmultun and Tulum only date from the New Empire, from 987 to its destruction by the Spaniards with the massacre of the last Itzas in 1697. The prodigious frescoes at Bonampak, discovered in 1946 by Healey, today constitute the most complete and best preserved collection of this artistic technique of which so few remains still exist. The rare Lakandon Indians who still live in this region of Yucatan, and who earn a meagre subsistence by gathering chicle gum for the Americans to use in the manufacture of chewing gum, are the descendants of those people whom the anonymous artists of Bonampak represented in the Temple of the Tigers. This dates from about 750, that is to say, it corresponds to the beginning of the third period of the Old Empire. These frescoes have been described by Agustin Villagra Caleti, *Bonampak, la cuidad de los muros pintados*,[2] but excellent reproductions can be found in *Maya Cities*, already cited several times, and which should always be referred to to answer any question relating to the art, civilization and religion of these people.

Sixteen feet high and 50 feet long, the Temple of the Tigers consists of three chambers with overhanging arches, completely covered with great compositions painted in frescoes on a layer of limestone, which are admirably well preserved. The colours have retained their freshness and lustre, and these episodes taken from the ceremonial life of priests and chiefs are truly astonishing and magnificent. A military parade, prodigiously be-feathered, the reception of foreign ambassadors, a massacre of prisoners of war, feasts, games and sacred episodes are all assembled with an extraordinary spirit for display. One day it may be possible to read the hieroglyphic inscriptions which accompany the paintings. Then the political and social events in the life of the Lakandons of yore, to which these representations relate, will be known.

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[1] *Op. cit.*, p. 138.

[2] Published in Mexico in 1949.

The American archaeologist, Villagra Caleti, who has studied these paintings, thinks the building they decorate was constructed to commemorate a great victory, and that the succession of the paintings along the three rooms represents the story of the war terminated by this victory; the Maya equivalent to the Gallery of Battles at Versailles. As far as painting is concerned, I do not think that anything comparable to the frescoes at Bonampak exists in all American archaeology.

The compositions in the first chamber represent processions of great personages and war chiefs, escorted by musicians and dancers wearing monstrous masks. Priests dressed in great white cloaks converse amongst themselves. These paintings give an impression of powerful gravity, of contemplation, in vivid contrast to the frescoes in the second chamber, devoted to battle. War there is stylized in an indistinct mêlée of inter-tangled brown bodies, with immense plumes of feathers oscillating above. The essential aim of battle was not to kill as many of the enemy as possible. As with the Mexicans, the preoccupation was rather to take prisoners who would then be sacrificed to the gods. This treatment reserved for the unfortunate captives is represented in the composition covering the northern wall. The conquered enemy are led before the chiefs, magnificently adorned in leopard skins and wearing fantastic helmets bristling with animal snouts. The supreme chief wears an immense quetzal tail on the crest of his helmet. On the steps leading to the upper platform where the princes impassively witness the slaughter, writhe the prisoners, the veins in their wrists cut. This fresco presents particular interest from the aesthetic point of view because it shows a very obvious and quite skilful effort to place the scenes taking place on the stairway in perspective.

The third chamber plunges into the intoxication of triumph. Princes joyously banquet or hold council as to how to share out the enemies' spoils. Fantastic orchestras play, the dancers wave their plumes and clashing weapons. On the southern wall, which contains the *chef-d'oeuvre* of Bonampak, the whole field is occupied by extraordinary personages executing a sacred ballet—and it must have been difficult for them to move for they wear immense helmets higher than themselves, piled with feathers, ribbons and jewels.

If we know the Maya at least fairly well, how many unknowns still exist as soon as we approach other Central and Southern American races! First of all, amongst the immediate neighbours of the Maya, to a certain extent touched by their civilization, are the Pipiles. These were studied by the Swiss, Stoll, in the last years of the nineteenth century and have been the object of recent research by American archaeologists. Only a few stone statues are known of this race, those masculine and feminine idols to whom children were offered in sacrifice. Their religion and calendar were somewhat analogous to the Aztecs, who seem to have made incursions on the lands of the Pipiles and left numerous elements of their culture. Or at least, a common Toltec influence is concerned here; the historian of the Chichimecs, Ixtlilxochitl, considers the Pipiles to have been Toltecs who emigrated after the destruction of their empire. Some neighbours of the Pipiles, who occupied Honduras and Guatemala, the Niquirans, are also of uncertain origin. Possibly, if Lehmann's hypothesis is correct, they were the representatives of the ancient inhabitants of the country, crushed and almost annihilated by the Aztec conquest. On their arrival in the New World, the Spaniards were surprised to see these people practising confession, which appears absolutely exceptional in the various pre-Colombian religions, and ablation of the genital organs, offered on the occasion of certain feasts, to the God of Maize, in order to obtain abundant harvest. The chiefs ate the bodies of the victims after the ritual sacrifices and it was customary to break all objects belonging to the deceased and bury them with him. The idols were also broken, for a strange reason reported by the historians of the conquest: so that the idols should think of the dead for twenty or thirty days and then forget him. This would indeed be a strange motive and throws a very interesting light on the religious ideas of this still little-known race.

The Guetares of Costa Rica have only left a few monuments. Attracted by the jewels which these skilful gold and silver workers manufactured, the Spaniards sacked the tombs they discovered in the funeral tumuli. The Guetares carved quite impressive stone statues, which have some affinity with the proud, crude art of the Arawaks and Caraibes. Their pottery, known from their funeral places, was very beautiful, glazed black, and had already attracted the attention of Oviedo (who, in another connection, described a peculiarity of this race which consisted in their smoking enormous cigars sometimes lasting a whole day).

Practically nothing is known about the Chiriquis who populated Panama. There are no ruins of monuments here, not even large statues. It might be doubted whether the men who inhabited the country possessed a real civilization had not remarkable golden

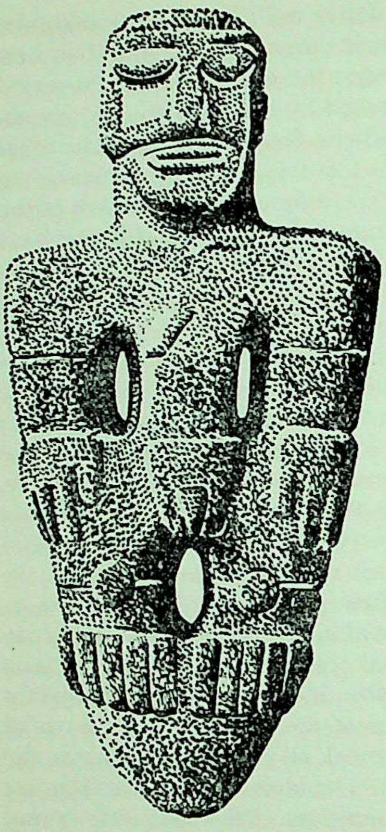

Fig. 22 Personage in granitic rock, Costa Rica, Guetare civilization

objects, most frequently representing stylized animals, and particularly vases, strangely related in shape to Archaic Chinese pottery, notably their tripods, been found in the tombs.

It is impossible to calculate the period when the archipelago of the Antilles was populated by a race descended from the mainland, probably South America, because none of the objects found there gives any clue as to date. Some archaeologists think these immigrants came from Florida or Venezuela, and, in fact, the same type of stone hatchet has been found in these countries as in the Antilles. As Pittard has remarked[1] these hatchets become increasingly abundant as finds are made nearer Venezuela. At a time when the first Americans only used boats constructed of bundles of reeds, long crossings were full of hazards. The first men to land these frail skiffs at the Antilles would have been the Arawaks, and on their arrival the natives would have fled and taken refuge in Florida. The civilization of these natives from whom the Calusas of the Spanish historians were possibly descended, is unknown. It could very well be that the stone objects found in the Antilles—some beautiful hatchets as well as pestles crowned with human heads, curious statues shaped like tables, heavy stone yokes, and finally those indefinable idols consisting of a block of stone with three points, the central point usually depicting a mountain and the two extremities often carrying a human representation, are their work. The term "idol" is used for want of a more precise term to designate these strange objects, principally found in Puerto Rico and San Domingo, almost in the same zone as the collars or stone yokes. Their exact location in the Antilles, to the exclusion of the other American countries, poses a problem which further excavations may perhaps resolve.

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[1] *Les Civilisations précolombiennes*, Geneva, 1946.

The Arawaks were expelled or massacred by a new race of invaders, the Caraibes, who only preserved the women and probably reduced the rare survivors to slavery. The Spaniards found the Caraibes occupying the Antilles when they arrived at the New World and they massacred them in their turn. The newcomers do not seem to have added anything to the lithic equipment of their predecessors except a certain model of stone hatchet, of less beautiful workmanship than that of the Arawaks, which sometimes terminated in the beak of a bird. It is not known whether the strange divinities called *zemis* by the natives and manufactured in cotton as well as in stone and wood, belonged to the Arawaks or the Caraibes. But whichever it was, the talent of the primitive artists and their religious fervour has given them a terrifyingly fantastic appearance. These three degrees of civilization, autochthonous (Calusa?), Arawak and Caraibe, appear so closely entangled that it is impossible to determine which properly belongs to which. Influenced as it must have been by the population of the mainland, the insular culture nevertheless presents very special elements. This is seen in the treatment of pottery, which is quite coarse and much less beautiful than that found at the same level of civilization in America, in the treatment of wood, from which strange seats in human shape were made, possibly representing the slaves on whose backs the conquerors sat (as still occurs today in certain African regions where so many footstools are anthropomorphous for the same reasons), and finally in the treatment of stone, which has provided a profusion of objects of remarkable shape and decoration.

If the Arawaks were distinguished for monumental and massive stone work, the people of Muiscas, also called Chibcha, have excelled in the art of smelting and chiselling golden jewellery since time immemorial. They inhabited the high Andean plateaux of present-day Colombia. The wealth of the ancient Muiscas was so great and their prodigality in decorating their deceased so generous that a museum exists today at Bogota significantly called "Museum of Gold" which possesses an incredible profusion of magnificent and delicate jewellery found in tombs dating from the pre-Colombian period.

The Muisca civilization was in full flower when the Spaniards arrived in the country, which they called after the great sailor who "rediscovered" America: Christopher Columbus. Fantastic legends report that the Indians there had magnificent dwellings with roofs resting on golden columns, because gold there was as common as seeds of maize. The legend must have spread all over America because at Quito the conqueror Bonalcazar had heard the story of a prince who every morning covered his body with powdered gold, having previously coated it with turpentine, and who possessed prodigious treasures in precious stones and precious metals. This report, which was probably accurate, gave birth to the legend of the Eldorado, which fired the imagination of the young people and the half-starved soldiers in the smallest towns of Spain.

Gold in fact was so abundant and so common in this region that the conquerors used it to manufacture nails, locks and to shoe their horses, as much for reasons of economy as by a taste for display, because iron, which had to be brought from Spain, was infinitely more scarce and much dearer than gold.

The treasure hunters swept down upon the Muiscas long before the archaeologists undertook methodical excavations. Some of them possess a striking flair for "smelling out" tombs with treasures and estimating whether they are rich in gold. Proper excavations began about the middle of the last century, but we are particularly indebted to J. P. de Barradas for a systematic and complete study of the Muisca civilization in past and present.[1] The five thousand gold objects displayed in the Museum of Gold at Bogota are evidence of the activity and good luck which enabled archaeologists to amass such sumptuous booty.

The Muiscas' passion for gold was even stranger as the metal was not to be found in their country and they were obliged to bring it from quite far away, at heavy expense and great risk. To procure the raw material for their jewellery they bought gold from the Poinas who had rich ores, or even stole it in the name of war booty, from the Panches with whom they were in a constant state of war. Gold to the Muiscas did not constitute riches. It played no rôle in the economy of the country. They were content to work with it to make delicate jewellery, votive statuettes, ear and nose ornaments,

[1] *Les Indiens de l'Eldorado*, Paris, Payot, 1954.

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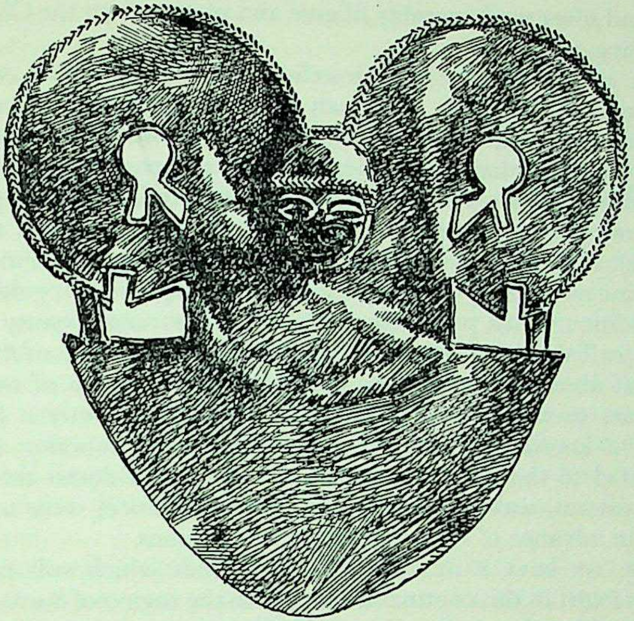

Fig. 23 Breast plate in gold alloyed with silver, Colombia, Chibcha civilization

buckles, pendants, destined to decorate the chiefs and, even more, to make offerings to the gods and to the deceased.

Gold work was regarded as a sort of sacred function and the artists who pursued it had to submit to special rites of purification to appease the spirits of the metal, and to sexual and alimentary taboos, the infringement of which provoked catastrophes affecting the whole country. The process of smelting in most general use was that of the "lost wax", but the Muiscas also knew the art of stretching the golden thread and fining it down to make figures in filigree. They also knew how to chase gold and gild stone and wood by means of secret methods.

About the period when the Toltecs reigned in Mexico and the Maya of the New Empire in Central America, the high plateaux of Colombia were occupied by the Chibchas, magnificent gold and silver workers, of whom nothing remains, except treasuries of admirably worked objects in gold and copper. The relationship of some of these objects with those discovered in Peru, in the treasury of Lambayeque for example, appears to confirm the hypothesis of the influence of the Inca civilization on the neighbouring Colombians, although the influence may have been exercised in the opposite direction—and the Mexicans learnt some techniques of gold and silver work, notably filigree and plating from the Chibchas, according to Rivet.

This virtuosity in the art of jewellery seems to have been common to several other South American races, notably the Quimbayas, the Diaguites of the Argentine Republic (who are supposed to have had a very important civilization, possibly comparable to the Incas, with whom they show several common characteristics, principally in social organization, the art of pottery and the care given to agriculture), and, finally, the Caraques who had brought technique to the point where they could make an alloy of platinum, gold, silver and iridium, which provided a grey metal of strange beauty. When it is recalled that platinum, quite abundant in Colombia, only melts at about 2,000 degrees one wonders what type of oven the Caraques used to obtain this fusion. This presupposes a level of scientific knowledge and industrial equipment superior to that attributed to the Caraques before the discovery. Apart from this, their customs, way of life and religious observances were not very much in advance of other American populations.

Here, we have a number of the enigmas which still face the archaeologist in this continent. In 1948 in the region of Santa Maria in Colombia, the civilization of the Taironas was revealed. They were also excellent gold and silver workers and perfect agriculturalists, in imitation of the Incas, but they produced ceramics with geometric decorations completely different from anything found in America. Discoveries such as this are evidence of the extent to which knowledge is enriched every day and also all too obvious reminders of all that remains to be discovered before we possess an overall picture of the totality of pre-Columbian civilizations.

CHAPTER VIII

THE PEOPLE OF THE PLUMED SERPENT

MEXICO IS the archaeologist's paradise. So many cultures have succeeded each other in this extraordinary country, each leaving its own unique trace. About three hundred new sites are discovered every year, far exceeding the "archaeological fertility" of Mesopotamia, Egypt and Asia Minor. Despite the enthusiasm of Mexican scholars and assistance from the Mexican Government and the Carnegie Institute of Washington, many sites lie fallow as soon as discovered because of lack of resources—in men and money—to exploit them. But they present an inexhaustible mine of future discoveries.

Although all identified sites have not yet been fully exploited, over 1,500 are at present in course of excavation or fully excavated. The unparalleled wealth of Mexico in ruins and archaeological remains of all sorts can be calculated from maps contained in the monumental work by Ignacio Marquina, published by the Secretaria de Educacion Publica, *Estudio Arquitectonico comparativo de los monumentos arqueologicos de Mexico*. They show the whole country strewn with points indicating the position of sites, so close together that it seems as if the whole State is powdered with a fine dust of ruins. Plans of the monuments can also be found in this work, as well as coloured reproductions of the frescoes and bas-reliefs which abundantly illustrate the text and make the book a unique source of information and instruction.

"The appearance and type of remains vary greatly", writes José Reygadas Vertiz.[1] "The classification according to type adopted in the catalogues, covers all the possible forms the remains present, from architectonic structures, which may be splendid monuments (such as those at Teotihuacan and Yucatan) or simple monticules covering ruined walls, to a simple deposit of broken ceramics, without apparent importance. However, after investigation the latter can often be of as great or even greater significance than a monument. The modern study of ceramics in stratigraphic excavation, differentiating and classifying the successive deposits, is now used to throw light on the type and chronological succession of extinct civilizations. Between the two extremes of the monument and broken ceramics, there exists a complete variety of manifestations, remains of constructions, monticules covered with earth in the shape of small pyramids; they are very numerous: sculptures, sepulchres, grottoes inhabited in ancient times, fortifications, petroglyphs and pictographs."

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[1] *L'Art vivant*, Paris, January 15th, 1930, p. 42.

Furthermore, Mexican archaeology is of a fairly recent date. The Spanish conquerors were more concerned with destroying and pillaging than with preserving the monuments they found. Later, what had not already been annihilated by greed or stupidity was allowed to fall into decay. "The Spanish Government", according to Vertiz, "and the independent governments took no measures to look after them until the first years of this century, when the General Inspectorate of Archaeological Monuments was founded and work begun in some important places such as Teotihuacan, Mitla and Xichicalco. But the real work of study and preservation which followed a general plan, as far as the financial position of the Mexican Government permitted, began in 1911 and was intensified in 1914, when the ruins of Yucatan began to receive special attention. Since that date, as a result of the care given by the General Inspectorate, the Department of Anthropology and, at present, the Director of Archaeology, our monuments have been surveyed, studied and preserved as far as possible. An archaeological map has been established, periodic inspections made and the necessary work of preservation and exploration carried out."[1]

Material and intellectual resources were further implemented after 1923 by an agreement between the Mexican Government and the Carnegie Institute of Washington, which brought the financial and scientific support of American scholars, stipulating that objects discovered should remain in their country of origin and that Mexican officials should preserve a right to inspect the excavation works.

The task of excavation, clearing and restoration has been conducted with remarkable energy. *Monumentos arqueologicos* of Mexico, published by the Ministry of Public Education in Mexico, as well as various publications by the Carnegie Institute, contain documents which enable highly interesting comparisons to be drawn between photographs of the sites when work commenced and their present appearance.

The immense difficulties involved in the study of remains which have literally been devoured and in certain cases "digested" by invading vegetation, have already been mentioned. Despite this, more than 1,500 sites in process of study can be counted on the map of Mexico (naturally including the Maya ruins of Yucatan and the various Mexican states), and most of the ruins thus freed today

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[1] *Op. cit.*, p. 45.

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appear, perhaps not as intact as at the moment of Spanish conquest, but at least sufficiently explicit for the genius of the ancient architects and the fantastic imagination of the sculptors and painters who decorated the buildings to be appreciated. To make the task of the archaeologists even more difficult, in many places, as in Cholula, for example, Christian churches have been built on the ruins of ancient pagan temples. These remains of the Conquest, which are often very interesting, paralyse the free activity of the excavators.

Elsewhere, the confusion of constructions belonging to different periods and the re-use of materials, primitive foundations and decorations, complicate still further the task of differentiation. The pyramids of Teotihuacan and Xochicalco are as completely separated today as those of Giza, Saqqara or Meidoum—some of them even preserve a greater part of the fantastic decoration of the storeys and stairways. But others are in a state of dilapidation which will present an almost impossible task to the restorer.

The abundance of sites naturally prevents us naming them all. Besides, some periods of Mexican archaeology are already so well known they do not need to be resurrected. The classical age of the Aztec civilization, for example, has been thoroughly studied for a long time. However, it is wrong to give the Aztecs the exclusive or even the most important place in the development of Mexican culture. As Vertiz says,[1] "all the archaeological remains of Mexico are generally believed to be Aztec. This is equivalent to attributing all the ruins in Mediterranean countries to the Romans. There are styles in Mexican art as different as Egyptian from Greek. The Aztecs, to whom the ruins of Mexico are attributed, were only a barbarian tribe who definitely settled in 1325 and who received the legacy of the civilization that other more cultivated races had elaborated earlier."

Thus it is sometimes very difficult to distinguish amongst the different cultures and determine with precision whether such and such a monument should be attributed to the Toltecs, the Mixtecs, the Totonacs, the Tarascs, the Olmecs, the Huaxtecs, etc. The principal result of recent excavations is, as we will see further on, to differentiate between the character and contributions of the different cultures over the centuries and to recognize them in archaeological remains. Highly accurate criteria are now used for this complicated operation, mainly obtained during recent years. Finally, the most important discovery of these latter years was of archaic civilizations (also called pre-Toltec) which gave to Mexican civilization an even greater antiquity.

In the southern part of the valley of Mexico, the stony valley called the Pedregal de San Angel holds a wide outflow of lava, left by the eruption of the Kitle volcano probably three thousand years ago. Remains of the Toltec civilization were found above this layer of lava, analogous to those at Teotihuacan, and, above these, traces of Aztec civilization. But the archaeologists were not content with what the upper layers had offered. They decided to look beneath. Here, under lava over 25 feet thick they first found remains of pottery and then of tombs where skeletons rested beside their funeral utensils. There could be no doubt of the antiquity of the civilization thus discovered. It was obviously earlier than the eruption of Kitle which had probably swallowed it, and as a result, quite easy to date on the basis of the geological data of the place.

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[1] *Op. cit.*, p. 46.

Scholars are still not agreed on the date of the eruption of Kitle. It is also impossible to determine how long this culture known as archaic may have lasted before lava covered Pedregal. It is generally reckoned, however, that it would go back at least four thousand years, if the antiquity of Toltec culture is taken as three millennia.

"The age of archaic culture", writes Pericot,[1] "can still not be determined. It had a certain level of agriculture (maize), as well as the weaving of cotton. It constructed earthworks as at Cuicuilco, but did not know real architecture in stone. Essentially, it contained the elements which characterized the later culture of Teotihuacan, and the root of classical Mexican civilization is found there. Work by G. C. Vaillant and Noguera, at Ticoman, Zacatenco and Gualupita, has cleared up several points concerning this culture. Vaillant suggests that it should be called 'middle cultures', because the ostensibly archaic culture has no unity and, on the other hand, it is already an evolved culture, supposing earlier stages, still unknown, but which there will be no delay in studying."

Discoveries by Gamio and later by Kroeber, in the region of Atzapolco, have enabled four periods of this archaic civilization to be distinguished, according to differences in the ceramics. But it is primarily excavations conducted by G. C. Vaillant[2] not far from Mexico, which have revealed the exact successions of all the cultures which evolved from the archaic to what is called *azteco reciente*, and which are easily recognizable by variations in ceramics. As far as the archaic culture proper is concerned, Vaillant has determined the sequence of the strata of this civilization which rise in tiers one above the other in the following order: Ancient Zacatenco, Middle Zacatenco, Recent Zacatenco, Ancient Ticoman, Middle Ticoman and Recent Ticoman.

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[1] *La America Indigena*, Barcelona, 1936, p. 556.

[2] *Excavations at Zacatengo*, New York, 1930. *Excavations at Ticoman*, New York, 1931.

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The ancient Mexicans certainly possessed some degree of civilization and art. At Copilco, beneath the lava of Pedregal, Gamio found the foundations of a vast construction, interrupted or destroyed later by the eruption of Kitle, which Marquina thinks was an ancestor of the Toltec and Maya pyramids. There was also some very interesting pottery, stone tools, a quantity of clay statuettes modelled by hand, of very rudimentary art, and others in stone of strikingly savage simplicity. The technique of these figures is very significant. They are of a realism which is so alive that they appear almost certainly to have been portraits or sometimes even grotesque caricatures. On the other hand, the manner in which the detail of the face and the ornaments are afterwards applied to the coarsely outlined statuette, constitutes a typical stage in plastic art in clay. The vases are decorated in the same manner, with imposed geometric motifs or human faces.

At Cuicuilico there is also a truncated pyramid, about 75 feet high, of which the lower part is buried in the lava. Vaillant has been able to distinguish five successive periods of culture from the style of the figurines and pottery discovered at this site. The pyramid, according to the figures which accompany it, goes back to Recent Ticoman. It is thought that, by the time the eruption occurred, it had already been abandoned and fallen into ruins. According to Cummings, who was already excavating there in 1922, it goes back several thousand years before our era.

There are no architectural remains at Azcopotzalco, only the remains of rudimentary dwellings, which probably consisted of palm leaves coated with mud and dried, which gave them the consistency of brick. Pottery has also been found there, as well as stone statues in sombre style, severe and grandiose, sometimes reminiscent of the Polynesian Tikis, and volcanic fragments, engraved with geometric figures or human silhouettes, where the incisions were enhanced with red, yellow and green paint.

From the first stage in this archaic civilization, that is to say, from what Vaillant calls the Primitive Zacatenco, everything points to a race in possession of refined techniques—the pottery is evidence of this—and of an art which, although still rudimentary, nevertheless already possessed the elements characteristic of future Mexican art in its full development. The vases are beautifully shaped, sometimes polychrome, decorated with geometric figures and incised designs. At times they are ingeniously arranged on three legs, which evoke comparison with certain Chinese vases of the Chou period. Furthermore, indications of clothing on the clay statuettes prove that the peoples of the period were able to weave in cotton; the richness of the jewellery: necklaces, ear-rings, bracelets and ankle rings, represented on the effigies, shows the taste and prosperity of the people who manufactured them.

The evolution appears still more obvious in the Ticoman period. Here, in fact, ceramics made great progress, with the appearance of anthropomorphic vases, or vases decorated with human figures. Vaillant singles out the clay incense burners as an important element of this period, which was absent in the preceding period. Finally, sculpture in stone, which demanded more powerful aesthetic sense and highly skilled technique because the men of the archaic period did not know metal and only used stone tools, marks a very clear advance on the preceding age. Everything was in readiness for the flowering of the Toltec culture.

"No tradition", writes Gann,[1] "of these archaic people has been handed down to us, and our knowledge of them is derived exclusively from objects which have been recovered from sites which they occupied. Judging by their skeletal remains they belonged to the medium-headed people, and were rather short, but well developed. They had made considerable progress, especially in their later stages, in the arts of spinning, weaving and ceramics. They wore short skirts, or loincloths, and elaborate head-dresses and ornaments. Few traces of their houses have been found, but these were probably built of adobe mud, with reed or palm-leaf thatched roofs. Their arms consisted of clubs, bows and arrows, and spears, which they threw by means of the *atlatl* or wooden spear-thrower. Their impedimenta and weapons were made of flint, obsidian and bone, and they ground their maize on the same kind of stone metate as is in use amongst the Mexican Indians of today. We know little of their religion, but they appear to have worshipped no standardized gods, unless the naked fertility images can be regarded as such. . . . The archaic people must have been descended from nomadic hunters, wandering south from the plains of North America and gradually developing agriculture in the highlands of Mexico."

"Archaic Mexican culture", writes Pericot,[2] "poses two problems of great interest. One consists in knowing to what people or race they belonged, being obviously pre-Nahua. Two authors as competent as Gamio and Seler are agreed in attributing them to the Otomis. But we do not believe that anything of a definite character can yet be stated on the subject of the ethnic correlation between the 'middle cultures' and the peoples whose names are known. The other problem is that of the extension of the archaic culture to other regions of Central and Southern America, which would indicate a vast cultural or ethnic unity at a very remote period."

The theory of the unity and virtual universality of this archaic

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[1] *Mexico*, Lovat Dickson, London, 1936, pp. 13–14.

[2] *Op. cit.*, p. 557.

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culture received very interesting confirmation from the discovery of ruins of very ancient towns[1] in the Amazon Basin and in Venezuela, particularly on the Island of Marajo. These seem to have been in harmony with the archaic culture of Mexico, thus showing that it even influenced the life of distant peoples inhabiting the virgin forests of the Amazon.

When the mists of pre-history dissipate, the first civilized nation to arrive on the threshold of history were the Toltecs. Toltec culture is so great that present scholars are almost at one in attributing to it the strong civilizing influence previously ascribed to the Aztecs. All the art and religion of Mexico is contained in what is known of the Toltecs. The peoples of later cultures modified, completed and concluded it. But the very roots of their civilization always remained in that of the Toltecs—themselves indefinably rooted in the archaic cultures of Zacatenco and Ticoman.

However, the Toltecs are still far from perfectly known. Like the Maya, they still retain a large part of their secret. We do not know whence they came, what was their race and what their original habitat. We do not know at what period or as a result of what upheaval of peoples, they came to settle in Mexico—because the whole history of American civilization is an incessant *Völkerwanderung*, even more important than the migrations of the Goths or Huns in European history. We do not know the duration of their settlement or the sequence of their kings.

All that can be stated is that, when the nomad and barbarous tribe of Aztecs arrived in the valley of Mexico they found a nation which had arrived at a higher degree of civilization, materially, intellectually and artistically. These peaceful and industrious inhabitants, agriculturalists and artists, had spread the advantages of calm, abundant prosperity throughout the country, so much so that legend retains the memory of their occupation as a golden age.

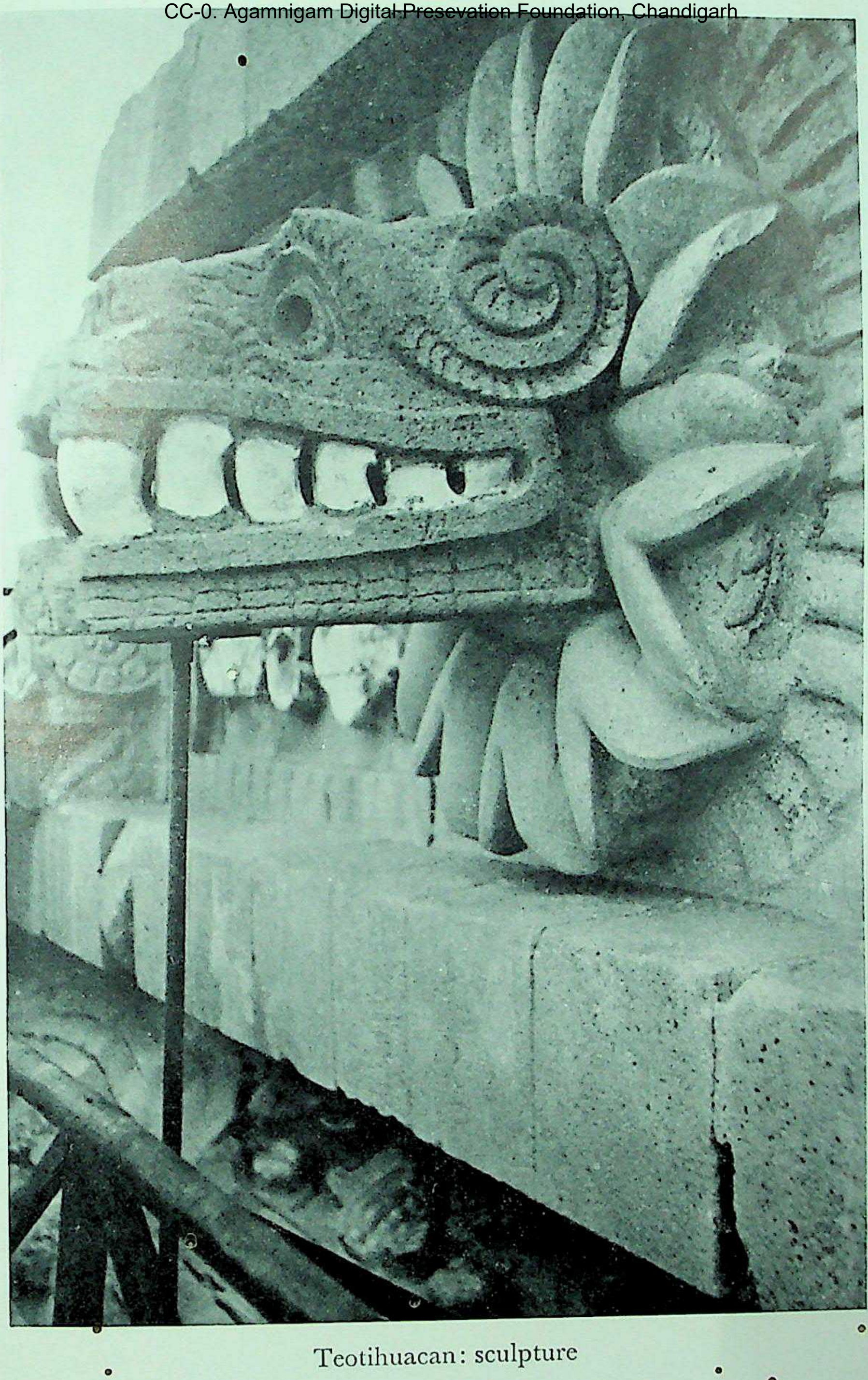
The fabulous legends which have run through America since the arrival of the Spaniards about the myth of Eldorado, regarding treasures buried by the natives for fear of the invaders, have been the cause of disastrous depredations. Temples were almost completely demolished by the picks of greedy excavators pursuing the "treasure of the Aztecs" or the "treasure of the Toltecs". This was the case at Tula, ancient capital of the Toltecs, which, in popular language, bears the significant name of "Cerro del Tesoro"—"hill of the treasure". Magnificent temples with noble sculptures, which have been skilfully and reverently restored since 1940 by the Mexican Service of Antiquities, were stripped of bas-reliefs and almost reduced to hillocks and débris. Fortunately, disappointed by the

[1] E. Nordenskiöld, *L'Archéologie du bassin de l'Amazone*, Ars Americana, Paris, 1930.

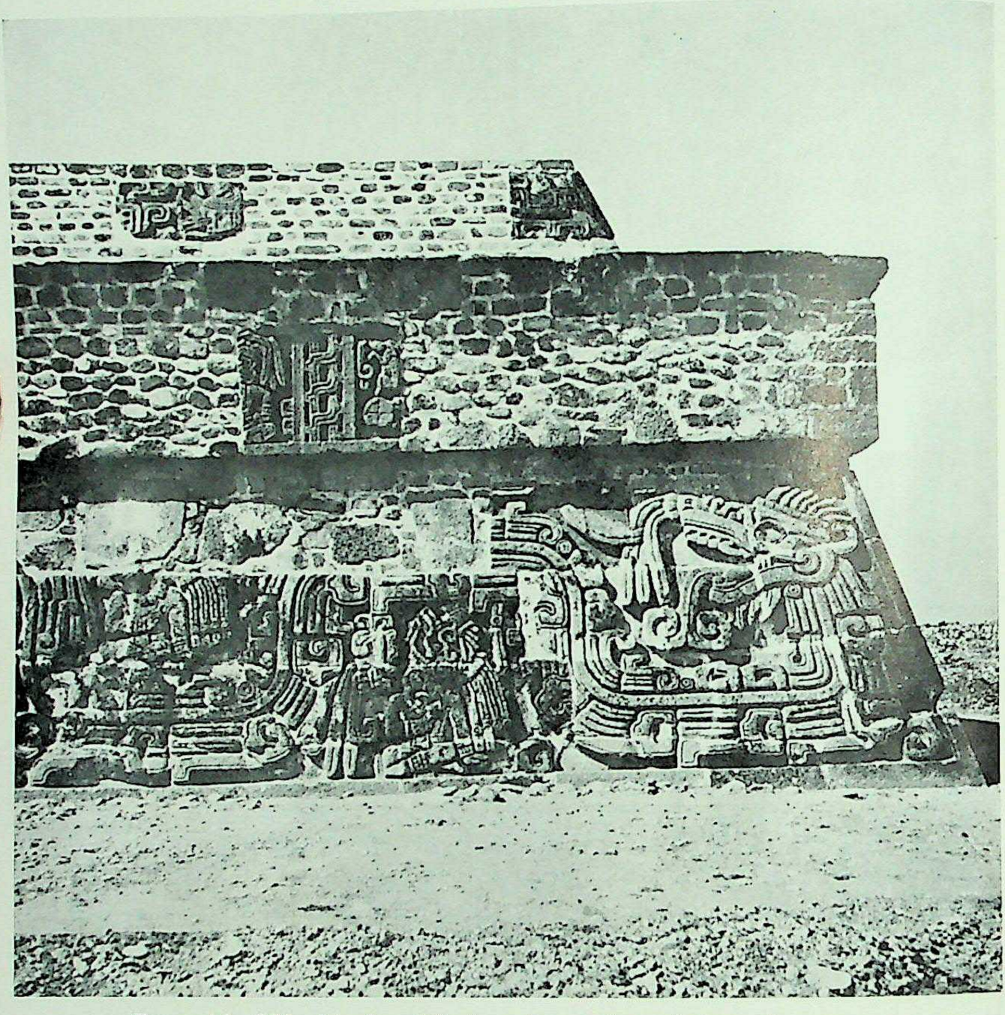
vain pursuit of non-existent, or, at least, undiscovered, treasure, the pillagers grew weary and abandoned the place to archaeologists. They, in latter years, have separated the general plan of the city from the confusion; the great sacred collection of courtyards, temples and ball courts, this sport being closely linked with all religious ceremonies. The temple of Tlahuizcalpanteuctli, god of the morning star, has regained its decoration of delicate and evocative bas-reliefs, with its friezes of animals, some treated in a style at times curiously reminiscent of the Proto- or Pre-Hittites of Alaca Huyuk. There is no question of reciprocal influences between the Anatolian site, explored in 1945 by the Turkish Director of Antiquities, H. Z. Kozay, and the Toltec towns, the more so as what is known of the latter scarcely goes back more than a few centuries before the Spanish conquest, the tenth century, for example. Alaca Huyuk, on the other hand, goes back to the third millennium and offers proof of what had been suspected but never before demonstrated: the existence of a very important civilization considerably before the arrival of the Hittites in Anatolia, contemporary and rival in importance and beauty to the great civilization of Ur in Mesopotamia. The resemblances are therefore fortuitous, but strange and worthy of notice. Toltec sculpture is represented at Tula by some large statues, in hieratic and monumental style, extremely imposing and completely different from Aztec and Maya works. Destroyed by the Aztec invasion, the Toltec Empire possessed a remarkable art to which the pyramids of Tula, with their friezes of eagles and tigers, their stone colossuses, in sober style, stark and much more classical than anything else found in America, bear important witness. Recent discoveries therefore fill a vital gap, and, as it is obvious that sites recently discovered or prospected are not yet exhausted, further sensational discoveries can still be expected.

Toltec texts, the Annals of Quauhtitlan, transcribed by the Spaniards, and the book of Ixtilxochitl, an Indian after the conquest who claimed to be descended from the royal family of the Toltecs, provide rather more legend than definite historic truth. Thus the Toltecs are said to be descended from the Chichimecs, Otomis or Nahuatls without conclusive proof. On the other hand, it appears certain that they were in communication with the Old Maya Empire, that commercial and artistic exchanges were frequent between the two countries and that the masters of Tula owed a large part of their civilization to the builders of Palenque.

Tula figures in the legends as the cradle of the Toltec Empire, which is said to have derived its name from Tula or Tolland. The town, situated in the State of Hidalgo, in the north of Mexico, is reputed to have been the original capital, but monuments found



Teotihuacan: sculpture



Pyramid of Xochicalco, Mexico, decoration of plumed serpents there seem to belong to quite a late period and resemble Maya statues at Chichen Itza, with fantastic bas-reliefs and columns shaped like serpents. Unfortunately, excavations on this site have been pursued less actively than elsewhere and everything known in the main emphasizes its differences from Teotihuacan. It would therefore appear as if the Toltecs constituted a sort of federation, with two capitals: Teotihuacan and Tollan (or Tula). However, ruins of private dwellings were found near this site, a rare phenomenon in Mexico, where the fragility of the materials with which the latter were constructed prevented them surviving as successfully as temples and palaces. But remains found here give quite useful information on the Toltec way of life.

"Most of these houses consisted of one room for the family and all the animals which belonged to it, as well as the brazier and the furniture. When the family was not very poor, there were other rooms: a chapel, a *temazcalli* or bath, and a small granary. Houses of great lords were built of stone and mortar; they included salons, large courtyards and bedrooms. The roofs were flat, in the shape of terraces, the walls carefully whitened and the entrance covered with reeds. They were lit with the aid of torches. . . . The houses were built on one floor; a small number looked on to the street. The temples contained an altar with idols, and opposite, the incense burners where copal was burned, and vases of flowers. The houses of the poor were made of reeds, local bricks, stones or mud; their roofs were covered with a sort of thick thatch or agave leaves."[1]

Teotihuacan is famous for the extent and beauty of its ruins. Its pyramids rise in the north-eastern part of the valley of Mexico and the remains of the Pyramid of the Sun (the name was given after the conquest—in reality, it is not known to what divinity it was consecrated) are exceptionally imposing.

"The Pyramid of the Sun", writes J. Eric Thompson,[2] "has a present height of no less than 215 feet, and covers an area of over half a million square feet with a frontage of 716 feet. Actually, the present measurements are considerably less than those of the original structure, for about two decades ago a thick layer was removed from the whole surface of this pyramid in the course of some very unscientific excavations.

"The structure is divided into five sections by setbacks in the sloping walls. These form narrow terraces, around which processions of priests, presumably, once wended their way in ceremonial ascents or descents. On the front, which is the west side, one ascends by means of an enormous stairway which is double between the second and third terraces. Actually, there is at the present time a small pyramid immediately in front of the west face which may have been a later addition. As a result of its presence, the staircase forks at this point, one spur descending to the north, the other to the south of the obstruction. In passing it may be noted that the forking at the base and the short double section are features not met with in most stairways.

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[1] Alfonso Teja Zabre, *Guide de l'histoire du Mexique*, Mexico, 1935.

[2] J. Eric Thompson, *Mexico Before Cortez*, pp. 254–5, London, 1933.

"The summit of the pyramid is a level platform originally covered with a plaster floor and measuring about 130 feet square. On this formerly stood the temple, but as this was made of perishable material no traces of it survive.

"Of the exterior facing of the pyramid nothing now remains, thanks to the vandalism to which reference has already been made. There is some reason to believe that the finish was similar to that of most Teotihuacan sub-structures. That is, the upper section of each sloping wall was decorated with a sunken perpendicular panel running the whole length of the face and enclosed in a raised panel. Apparently these decorative panels, which in turn were frequently ornamented with simple circles and other geometric designs were added to the structure after the construction of the sloping walls. As they were not firmly welded into the sloping walls their eventual collapse was assured.

"A tunnel driven into the interior of the pyramidal core brought to light many pottery figurine heads of the early Teotihuacan period. As no typical middle or late Teotihuacan heads were recovered, it is fairly certain that the work of constructing this enormous pile started during the early Teotihuacan period at about the same time as the Cuicuilco pyramid was erected. It appears, however, that the original structure was subsequently enlarged during the height of the Teotihuacan period."

A passage, about half a mile long, known as the Road of the Dead because it was bordered with small earthworks believed to be the tombs of kings—though recent excavations have shown them to be the remains of dwellings—led from the Pyramid of the Sun to that of the Moon. Not far away is the famous temple of Quetzalcoatl, its sculptured façade a masterpiece of Toltec art, with prodigious reliefs representing the god Tlaloc, with protuberant eyes and projecting teeth, the plumed serpent and shells, a symbol of Quetzalcoatl. All this was elaborated in a masterly manner by sculptors who only possessed silex tools, and encrusted with obsidian butterflies. It has preserved to a large extent its original polychrome, which must have given the swarming mass of monsters a fantastic appearance.

The plumed serpent which played such a large role in the art of

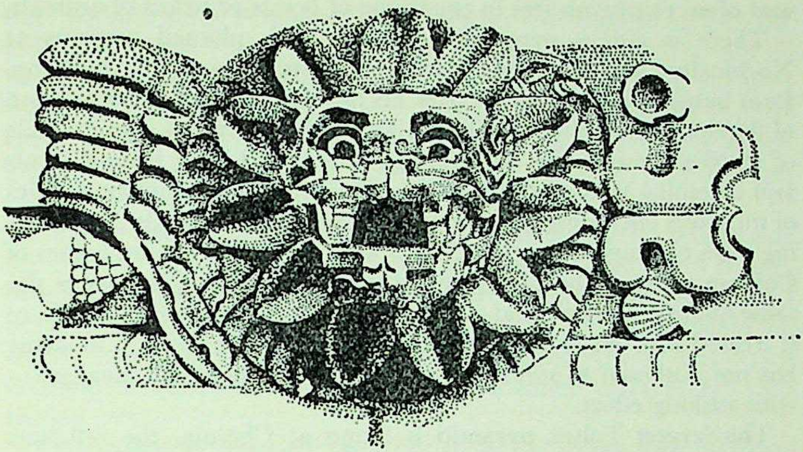

Fig. 24 Plumed serpent from the pyramid of Quetzalcoatl, Mexico, Teotihuacan

the different races of Mexico and which is seen at every step in the ruins of temples and palaces, in the most varied and most ingeniously stylized forms, seems to have governed the whole civil and religious life of the peoples, their aesthetic activity and even their politics—because war was made solely to be able to offer human sacrifices to this avid divinity. It is therefore necessary to study carefully what was designated by that symbol. Paul Radin gives one of the best definitions when he writes[1] that the plumed serpent obviously symbolized light, life and movement. It was probably originally associated with water, in its varied aspects. A well-known specialist on Maya questions, basing his theory on the name given to this divinity by one of the Maya tribes: "a plumed serpent who goes in the water", is of the opinion that Kukulcan personifies the undulation of the water by the wind which evokes both the feathers and the movements of the serpent. According to this scholar, Radin says, the plumed serpent simultaneously represents original movement and the wind, i.e. breath and life. In its aspect of serpent and water, it is closely related to the god of rain, while in its form of bird, it reigns over the sky and the cardinal points.

Also at Teotihuacan, there are some magnificent frescoes discovered in the Temple of Agriculture. They show episodes from religious life, the offering of copal to the divinity, grain, birds and scenes of divination. The tombs contain pottery of excellent technique, generally monochrome, in brown or black, but sometimes with polychrome designs painted or incised, having a delicate gloss and often resting on feet in the shape of beasts or heads of animals.

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[1] *Histoire de la civilisation indienne*, 1935, p. 36.

There is also a pyramid decorated with plumed serpents at Xochicalco, and here the serpents wind right round the building, form balustrades and climb over all the sides, giving an expression of dynamism, extraordinarily similar to the feeling of seeing a pile of reptiles come to life, unwind and stretch out their furious heads and threshing tails in all directions. Studying these fantastic tangles of monsters encircling the pyramid of Xochicalco recalls the crawling mass of dragons, serpents, birds and *tao-tie* seen on the bellies of Chinese vases of the Shang and Chou periods, which possess the same quality of primordial and demoniac violence. The serpent here is treated in a less stylized manner than at Teotihuacan. The artist has not bothered to stylize it to emphasize its symbolic savagery—with striking effect.

The largest Toltec pyramid is found at Cholula, the religious capital of the cult of Quetzalcoatl. It is also the largest pyramid in the world, because its dimensions exceed those of the pyramid of Cheops, the highest in Egypt. Cholula was the scene of an extraordinary movement of pilgrims converging from all regions of Mexico, and the Spanish conquerors have preserved this tradition in a strange manner by building a venerated Christian church on the pyramid in place of the temple. This desecration—or this second consecration to a different God—has meant that the monument itself is much less preserved than other Toltec temples. Its colossal mass is particularly impressive, the base is some 1,600 feet long. But Cholula is also celebrated for its ceramics. "This ware", writes Thompson,[1] "which is of late date, often reaches six or seven colours. The surface is very highly burnished, but there is no glaze, such a practice being unknown in the New World. . . . Intricate designs are found on this best Cholulan ware, which with local variations are also found in Tlaxcala. The decoration is frequently reminiscent of the paintings on the codices, but the high burnish brings out the deep richness of the brown, orange and chocolate shades to an extent unparalleled in the codices.

"Tripod dishes are particularly typical of this ware, the legs being frequently shaped as animal or human heads, but many other shapes are met with. In the nearby Tlaxcalan territory tall cylindrical jars with flaring bases are most typical. These also carry elaborate polychrome designs, sometimes of a somewhat grim nature, skull and crossbones being a by no means rare motif."

Amongst the most curious Toltec monuments, mention must be made of the circular temple at Calixtlahuaca, in the valley of Toluca. The building is not purely Toltec, but probably represents an intermediate state between Toltec culture and Matlazinc culture. Work by Payon disengaged this strange monument which has no parallel in Mexican architecture, unless the pyramid with rounded corners at Cuicuilco is considered an archaic prototype of circular temples. According to Thompson, they would have been consecrated to Quetzalcoatl in his form of god of the wind, that is to say, in his hypostasis of Eecatl.

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[1] *Op. cit.*, pp. 275–6.

"Early Spanish writers hint that circular structures were more suitable for the worship of the wind god, for the absence of corners moderated the gusts one often meets on turning the corner of a building. Presumably the wind god was . . . less hindered in his wanderings when he encountered a circular wall, and for that reason inclined to assume a more benevolent attitude towards his worshippers."[1]

Five storeys of masonry were added to the upper terrace where the temple was erected. This has not been preserved, probably because it was built in "adobe" or wood, and unable to resist the climate. A whole complex of building surrounds the circular temple which has not yet been completely excavated and which certainly has much to tell the archaeologist.

Furthermore, the Toltec civilization did not limit itself to the boundaries of its political power. As has already been said, it strongly influenced the art of the Maya, and, in certain sites which did not belong geographically to the Toltec Empire, proofs of its diffusion have been found. At Santa Lucia Coatzamagualpa in Guatemala, there are enormous sculptured monoliths, very different from those Maudsley discovered in the jungle of Quirigua. They are decorated with figures not resembling those customary among the Maya but more similar to Toltec art. It may be supposed that the authors of these monuments, with their severe and fearful grandeur, were Pipiles, a branch of the Toltec nation, which appears to have detached itself quite early from the original trunk and developed a personal culture, without however forgetting the traditions and prototypes of the race.

Elsewhere, in British Honduras, at Santa Rita, ruins of a temple have been found, buried beneath a hill of stones, which show paintings in fresco similar to those seen at Teotihuacan side by side with Maya hieroglyphics. Here, the two civilizations undoubtedly entered into closest contact and merged to the extent of mixing their techniques and aesthetics.

Nothing indicates with any certainty how long the duration of the power of the Toltec Empire lasted. Archaeological remains and literary texts offer nothing but conjecture. The annals of Quauhtitlan mention a period from the eighth to the eleventh century, but Gann finds this period insufficient. According to him, even though the remains of the archaic civilization, the civilization which he calls intermediate, and the Toltec civilization follow each other without interruption, and in certain strata even mingle, there would have been a fairly long period between the Toltecs and the Aztecs in the course of which the country would have remained unoccupied. "Recent discoveries", he says,[1] "have shown that Toltec pottery may be divided up into a considerable number of types, and evolution from the earliest to the most highly developed of these must have required a long period of time. The architectural changes in Teotihuacan, and especially the falling into desuetude of such a temple as that of Quetzalcoatl and its conversion into a mere foundation for a structure, together with the depth of the Toltec deposits at Atzaputzalco and the evolutionary changes in the figurines, postulate a long period of occupancy of the city."

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[1] *Op. cit.*, pp. 260–1.

He attributes the fall of the Toltecs to invasion by a nomad race, semi-barbarous, who progressively occupied the whole country.

According to Luis Chavez Orozco[2] who follows Mendizabal on this subject, the Toltec civilization fell under the impact of interior ethnic changes, notably a modification in the proportion of Nahua and Olmec blood. The battle of race corresponded to a religious struggle between worshippers of Quetzalcoatl and worshippers of Tezcatlipoca, and a social struggle between rich and poor, after which a Chichimec invasion completed the disasters resulting from civil war. The Chichimecs, according to the chronicle of Ixtlilxochitl, were natives of Amaquemecan. Under the leadership of their king, Xolotl, these people, three million strong, fought against the fertile and peaceful country of the Toltecs.

The Chichimecs possessed no civilization. They have left no remains. They were a naked nomad race who dwelt in caves, lived by hunting and fishing, and were very different from the cultivated and refined Toltecs whom they dominated by their very violence and brutality. This inter-regnum (of which archaeology proved the exactitude by the very absence of all traces indicating the presence of a civilization) prepared the scene for the entrance of the Aztecs, also a barbarian people, at least compared with those they conquered. But instead of establishing themselves as savage rulers over the country, they acclimatized themselves to it and absorbed everything from the Toltec religion and culture which their own personality could assimilate.

While awaiting the arrival of the Aztecs, we can examine the other races who, by reciprocal influence and cultural exchanges, in

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[1] *Mexico*, London, 1936, pp. 44–5.

[2] *La Civilizacion nahoa*, Mexico, 1933.

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certain cases, even amalgams, gave birth to the eclectic Mexican civilization.

There were the Huaxtecs, considered by some as a branch detached from the Maya stem at a very remote period. "The Huaxtecs, whom the Aztecs thought drunkards and barbarians because they wore a sort of glove on the virile member instead of a loin-cloth, possessed neither hieroglyphic writing, nor stone monuments, but at the most modest clay pyramids, sometimes covered with stone slabs decorated with stiff and clumsy human figures. On the other hand, their cotton fabric with its multi-coloured stripes was renowned; sketches of Huaxtec materials in Mexican historical texts give some slight idea of the beauty of this cloth."[1] They also possessed beautiful ceramics, with black motifs on a white base; the most curious shaped of these are in the form of a sort of teapot, with a projecting beak, found in the region of Rio Panuco. They tattooed their faces in the same way as the Maya and, like them, filed their teeth and incrusted their incisors with pieces of jade and obsidian. Their priests possessed magical powers, capable of producing surprising hallucinations. Worshippers of Quetzalcoatl, they erected pyramids and temples to the god, remains of which have been found in the region of Tuxpan. Their art, so developed in the decoration of cloth and pottery, only attained a rudimentary level in sculpture. Their large statues are crudely and clumsily modelled and mark no progress on the archaic period.

The Totonacs also possessed a high degree of civilization, judging by the ruins of Cempoala and Tajin, their most characteristic creations. Linguistically, they constituted an islet in the middle of the Mexican peoples, and their art also shows remarkable individuality, although it is traditionally claimed that their culture derived from the Toltecs. As so many other highly cultured races, they also fell victim to the brutal invasion of the Chichimecs. They then emigrated, taking with them the worship of their favourite god, Centeotl, the god of maize, whose priests made a vow of perpetual silence, wore robes of jackal skin and rubbed their bodies with a mixture of rubber gum and the blood of children.

The ruins of Cempoala show the degree of beauty and technical perfection the Totonacs had attained. The conic temple of Quetzalcoatl, the Temple of the Little Faces, decorated, as its name indicates, with a multitude of small heads in clay embedded in the walls of the sanctuary, the great Teocatli with its pyramid with steps, and the so-called House of Montezuma, do not possess the abundance and richness of decoration of the Toltecs, but are distinguished by great architectonic sobriety.

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[1] W. Lehman, *L'Art ancien du Mexique*, Paris, 1922, p. 10.

Their monuments, particularly those at Papantla, present a character unique in Mexican architecture: rectangular stone niches cover the walls of the temples. These must previously have been inhabited by a whole population of statues.

"The niches, together with the rest of the pyramidal facings, are constructed of well cut, neatly finished blocks of stone affording a marked contrast to the rough finish of pyramids in the Valley of Mexico when stripped of their concrete or stucco veneer. In many cases the slabs at the back of the niches retain traces of red paint over the stucco. Red paint is also found elsewhere, suggesting that the whole structure was once painted in this colour. The pyramid of Tajin has seven setbacks. The total number of niches is a multiple of seven; the cornices are formed by seven slabs; finally, the spaces between the niches are occupied by seven little seat-like arrangements. This strange use of the number seven must be more than a coincidence. Perhaps the explanation lies in the structure having been dedicated to Chicomecoatl, or a local variant of this goddess whose name means seven snakes."[1]

The statues which decorated the niches have disappeared, probably because they were made of clay. This is unfortunate, as only very imperfect appreciation of the plastic art of the Totonacs (which must have been as original as their architecture) is possible today. It is generally agreed, however, that the small heads which decorate the Temple of the Caritas contain a feature completely absent from the rest of Mexican sculpture: the smile. The faces of Cempoala, which appear to be portraits taken from a living model, show an open smile, at times as discreet and enigmatic as that of the Aeginetan statues, at others, widely hilarious and almost in caricature. The significance of these sympathetic and comic effigies which bring a note of familiarity, good humour and malice, into the generally savage and cruel Mexican art, is open to conjecture.

The use of two creations peculiar to Totonac art is equally unknown: the yoke and the shovel. The stone yokes, found quite abundantly in European museums, have given rise to different hypotheses, varying from that which would have them serve as pillows for the corpse in its tomb, to an equally probable suggestion that they were an accessory to human sacrifice, the heavy stone collar holding the head of the victim immobile while the priest dug his obsidian knife into the breast to tear out the beating heart. In the absence of more precise definition, they are called "yokes" in the same way as the stone plaques are called "shovels". They are almost the shape of a shovel, sculptured with human and animal figures, but their use is unknown.

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[1] Thompson, *op. cit.*, pp. 259–60.

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The Zapotecs have also left remains of a most remarkable civilization. Ruins of grandiose beauty have been found at Mitla and Monte Alban particularly, equal in importance to Toltec, Totonac and Aztec monuments. According to popular tradition, the holy town of Mitla was situated beside the entrance to hell. The Mixtecs, whose culture merges to some extent with that of the Zapotecs, also had a sacred town, Chalcatongo, similarly next to the entrance to the underworld. Because of this, Mixtec sovereigns and notables were buried at Chalcatongo, in order to be nearer their ultimate goal. The Zapotecs went still further; they did not wait for death to have themselves transported to the door to the underworld. Those attacked by incurable disease or even if they were merely tired of life, settled in the tombs where the corpses of priests and sacrificial victims were laid out, and awaited death from hunger.

This haste to reach the realm of the hereafter seems to indicate that it was a particularly attractive region. Far from it. What is known of the beliefs of the Mexicans regarding survival, shows the world of the dead, called Mictlan (hence the name Mitla given to the nearest town) as a combination of paradise and hell, where the dead were divided according to terrestrial activities and not by virtue of merit or fault. Thus the warriors accompanied the Sun in a garden full of flowers—provided they had died in battle or been slaughtered on the sacrificial stone, both considered of equal merit. Some remained with the sun to live near it in eternal beatitude. Others returned to earth as humming-birds, or birds with brilliant plumage, drinking the nectar of the flowers. The western paradise was reserved for women dead in childbirth, who only left to return to earth at night in the form of hideous phantoms.

Those who died from drowning or suffocation or had been struck by lightning, inhabited Tlalocan, the paradise of the god of water, where they seem to have been attracted by a strange destination. Finally, those who had not achieved such honourable death fell quite simply into hell proper, Mictlan, where they passed through a series of trials and migrations, described in the work by Alfonso Caso, *La Religion de los Aztecas*. To enable them to accomplish this dangerous voyage without difficulty, all necessary objects were placed at the disposal of the corpses, together with texts designed to reassure and comfort them, and enable them to triumph over the insidious questions in the infernal examination, in the same way as the Book of the Dead of the Egyptians and the Bardo Thodol of the Tibetans.

Mitla thus owed its sacred character to its proximity to the underworld. As a result, it became one of the most venerated and admirable capitals of the Zapotec Empire, and contains its most magnificent monuments. The architectural ensemble of buildings at Mitla shows great courtyards, surrounded by pyramids crowned with temples and palaces (or at least buildings designated by this name, though their exact purpose is unknown). Zapotec art has produced some surprising masterpieces in these remarkable constructions. They are made of stone, decorated with admirable care and precision, and cut as delicately and as exactly as could be done by modern workers equipped with the most perfect tools. The Zapotecs only used stone instruments, and yet were able to detach enormous blocks from the quarries. The grandeur of Zapotec architecture arises from the masterly method with which great masses were handled and arranged, as well as from the delicacy of decoration which resulted in stone mosaics of unimaginable refinement.

These mosaics are very complicated and show prodigious ingenuity. Greek key patterns and interlaced designs wind and unwind with astonishing logical exactness, covering enormous surfaces with decoration which is as exciting to the intelligence as it is restful to the eye. The Zapotecs seem to have preferred abstract, non-representational art to living forms. They thus created a style clearly distinct from all other Mexican artistic productions. There were also frescoes, but these have been less successfully preserved and do not enable Zapotec paintings to be so fully appreciated.

Zapotec decorative themes are reminiscent of Arab art. In both there is the same refusal to interpret representational forms, the same desire to be content with the play of pure form and the new rhythms that its infinitely varied arrangement can produce. Here, in my opinion, is the very clear influence of basket work and weaving. These themes have been taken from fabrics and adapted to the scale of the wide surfaces of palaces. Even the technique of execution recalls the prototypes from which the motifs have been borrowed—just as one can see in Roman sculptures the inspiration of ivories, miniatures or fabrics. The decorators of Mitla expended considerable ingenuity on this type of decoration, but they also treated it with precision and attention to minute detail, showing the influence of jewellers working with metals. Zapotec jewellery is famous. The "treasures" in the tombs of Monte Alban reveal an art which had attained absolute mastery in technique and aestheticism. Furthermore, Zapotec stone chisellers were not content to cover the surface of their palaces with contorted Greek key patterns. They did the same to the tombs. The cruciform tomb of Guirone, for example, in the State of Oacaca, has bas-reliefs in serrated Greek key patterns, exactly similar to those at Patio de las Grecas at Mitla. This seems to prove that, as these decorations were not intended to be seen, they may have had allegoric or religious significance and did not constitute a gratuitous decorative motif, as has always been believed. Similar cruciform tombs were also discovered at Mitla itself, made up of two galleries intersecting to form a cross and covered with a flat stone roof.

The tombs at Monte Alban, which became famous following discoveries in 1932 by Alfonso Cano, Director of the National Museum of Archaeology of Mexico, are quite different in appearance. They bear a strange resemblance to Etruscan tombs, with analogous arches, found elsewhere in the galleries of the labyrinth of Yaxchilan, in the State of Chiapas, which belonged to the Maya civilization. An important town stood at Monte Alban. Its ruins have been found on the surface of a *meseta* or plateau where the principal buildings of the town were impressively arranged. Monte Alban must have been the Zapotec capital before the race abandoned the site to settle at Mitla. Monte Alban civilization appears to have been affected by Maya influences. Monoliths discovered there bear Maya hieroglyphics in the midst of Mexican inscriptions. The resemblance is even more obvious at Quiengola near Tehuantepec.

While Mitla is typical of Zapotec-Mixtec civilization, Monte Alban represents pure Zapotec culture, perhaps with certain Maya infiltrations. Zapotec tombs are very important. This people did not practise cremation and showed extreme care in the manner in which they buried their dead, as well as in the funeral furnishings to accompany them into the hereafter. The sepulchral chambers at Monte Alban were composed of carefully assembled blocks of stone and roofed with wide slabs raised at the corners. Ignorant as were the American peoples of the arch, this represented the best approximation to a proper arch (with the exception of the arch found at Malinalco, which so far is unique).

Work of separation and reconstruction of the Zapotec city actively conducted by Jorge Acosta and Obregon de la Parra has brought to light the principal elements of the capital. Its ingenious and admirably constructed cisterns and irrigation apparatus can now be seen, the reservoirs fed by underground pipes—which show the Zapotec hydraulic engineers to have been the rivals and equals of the Romans. New temples contained in the vast and complex *temenos* which constituted the "holy city" have increased our knowledge of the art and civilization of the race, which had hitherto not been studied at all. Today, sufficient knowledge is available to write a history of pre-Columbian American sculpture, in its most varied manifestations—Maya, Mixtec, Olmec, Zapotec, Toltec. Each race has contributed its own particular characteristics. Thus, Toltec classicism, particularly in the form in which it is represented at Tula, can be compared with the extraordinary Maya symbolism and the prodigious expressionism of Zapotec bas-reliefs. The latter are well known today from discoveries in the "Temple of the Dancers" at Monte Alban. The static, hieratic aspect of Aztec, Zapotec and Maya art is here replaced by a sort of picturesqueness of extraordinary vivacity and animation. The Temple of the Dancers, probably dating as far back as the beginning of the Christian era, is decorated with a series of bas-reliefs which are extremely interesting in several respects. First, for their artistic value, the natural way in which they reproduce attitudes in an epitome of impressive brevity; and also for the documentary interest of gesture and movement, which certainly reproduce the movements of a sacred ballet. Differing so greatly from the severe gravity of the priests at Palenque, Chiapas or Teotihuacan, these naked dancers, caught in the photographic reality of unrestrained leaps, are an unexpected and precious contribution to the repertoire of pre-Columbian sculpture.

The tombs of Monte Alban (which can be compared to those of Texmilincan, which are more precisely Mixtec but contain similar funeral furnishings) are interesting for their architecture. But they have become famous more than anything else for the objects discovered in them, which have obtained popularity analogous to the treasures of Tutankhamen or Meskalamdag. At the World's Fair in Chicago in 1933, some of these tombs, notably Tomb 7, discovered only the preceding year, were reconstructed and the objects they contained displayed.

Ceramic funeral urns formed the majority of the objects found. These consisted of a sort of box covered with a fantastic figuration, principally representations of animals—jaguars, which had symbolic significance—or figures of gods, probably those which would welcome the dead on his arrival at the hereafter. "Very frequently", writes Thompson,[1] "the bones of the dead persons, for several corpses are sometimes found in one tomb, had been painted red or vermilion. This naturally implies a secondary burial. Possibly the bodies were allowed to rot, and, after complete decomposition, were cleaned, painted, and placed in the tombs. The bones of a dog, painted in rose colour, were also found in one grave, suggesting that the belief was also held in this region that a dog helped the soul of the deceased in his journey to the next world.

"In one case the skeleton of an individual had been placed immediately above the roof of the tomb. This may have been the body of some slave sacrificed to accompany the soul of his late master to the next world, for, naturally, only persons of rank were buried in these imposing vaults. In one case decapitated heads were

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[1] *Op. cit.*, pp. 291–2.

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found in a mound containing one of these tombs. Each was covered with an inverted dish. Heads treated in a similar manner and lacking a body have been found in different parts of the Maya area, notably British Honduras and the Peten area, and it has been conjectured that they were the heads of sacrificial victims."

But it is towards the "treasures" that the archaeologists' attentions are mainly directed, for it is here that Zapotec art attained its zenith. The engraved hard stones are of extreme beauty, and the men who worked them are all the more to be admired for they had no metal tools at their disposal and probably used powders or sapphires to cut the stones. Magnificently chiselled jaguar bones were also found, covered with hieroglyphic inscriptions, in vases of *tecatli* (a sort of alabaster), turquoise necklaces, and a rock crystal vase which is a marvel of technique and art. As for the golden jewellery, some worked by hammer, some cast by means of the "lost wax" process, it is a most wonderful example of the art of the Zapotec jewellers. Even more than the treasure of Texmilincan, that of Monte Alban has an amazing richness and beauty. The necklaces there are as exquisite as those of the ancient Egyptians; diadems surmounted by golden feathers, pendants bearing images of gods, or showing episodes in the ball-court, a solar disc in magnificently chiselled gold, bracelets shaped like serpents, ear pendants and chiselled golden plaques which were probably belt ornaments. But the most important piece is a breastplate representing the god of death, with a fantastic helmet, bristling with plumes and wearing a human jaw by way of mask.

The productions of the Aztec gold and silversmiths are scarcely known except from inventories of spoils sent to Spain by Cortez and his companions. Unfortunately, they melted down most of the jewellery they discovered, and pieces which survived this stupid destruction are infinitely rare. It is fortunate, therefore, that the tombs of Monte Alban guarded their secrets until today. These would probably have met the same fate as the fantastic treasures stolen by the conquistadores.

The civilization of the Olmecs was not on the same plane as the Zapotecs or even the Totonacs. The Otomis also need only be mentioned for the record. Their culture was much less developed. They made a particular cult of the god Xipe, who has also passed into the Aztec Pantheon; he liked the victims sacrificed to him to be skinned from head to foot. There are no interesting Otomis tombs as they practised cremation. The Tarascs, despite some very strange customs, do not warrant much space either. They venerated, above all other divinities, a drunken god who broke his leg when the other gods, disgusted by his intemperance, hurled him out of the sky.

They also practised skinning and incineration, at the same time killing large numbers of slaves, destined to accompany the dead into the other world. Except for the ruins of La Quemada, sometimes attributed to the Zapotecs, the Tarascs have left no very important monuments. This brings us to the Aztecs; their arrival in the Valley of Mexico marks the crown of this civilization.

When the Spaniards landed in America, Aztec culture was in full flower. Whereas all the other civilizations had disappeared or been absorbed into the latest invader, Tenochtitlan had reached the fullness of its flowering. The principal result of this situation was that, while most of the conquerors thought only of pillaging and destroying, certain priests who accompanied the soldiers were interested in the art of the conquered people. They questioned the Indians who survived the horrible massacres and brought together everything that they could still find intact. From their chronicles and the *Journal of a Voyage* by a soldier, Bernal Diaz del Castillo, who has left the most picturesque description of what he saw, the elements of Aztec civilization are known today. The destruction was immense and absurd. The loss to knowledge can never be measured—the entire libraries that went up in smoke, the melting down of the most beautiful and most refined creations of Mexican gold and silver into ingots. The statues of the gods were rolled from the high terraces to the earth, the temples razed to the ground. It is a miracle that this methodical pillaging left any remains standing. Archaeologists today find these under Christian churches and under the modern houses of Mexico, contributing their living evidence to the descriptions of the old chroniclers.

There is no place here to cover the elements already known to those interested in Mexican archaeology. It must be sufficient to examine the principal Aztec sites discovered recently or in course of exploration. These have considerably enriched knowledge of the iconography of the gods, and it is worth while trying to distinguish the principal characters of the Aztec pantheon where the gods of other nations sat side by side.

The religious syncretism of the Aztecs is in fact a phenomenon worthy of attention, quite as much as their artistic eclecticism. The Aztecs, now that we know the achievements of their predecessors, do not seem to have been great creators. When they emigrated from the mythical island of Axtlan, they were scarcely more than a barbarous tribe. When they left the legendary place of the Seven Caverns, augmented by foreign nations such as the Tepanecs, they had only attained a mediocre degree of culture, and were still well below the peoples they found settled in the south at the end of their migrations. Their history is a series of battles and massacres, of outrages and

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assassinations. When the King of Colhuacan gave his daughter as wife to their chief, they actually skinned her alive and clothed the chief with her skin. In this symbolical fashion he received the homages of the king and, with it, the government of the country.

The previous inhabitants of the country, the Toltecs, were peaceful and refined in their culture, skilful in trades and industries. The Aztecs were violent and savage. This explains their easy triumphs over less brutal nations. They settled in the fertile valley and, in 1376, erected the first monuments of Tenochtitlan.

The Aztecs set to work to reconcile the divinities of their nomad tribes, possibly deified heroes like Quetzalcoatl, with the gods of the preceding occupants of the soil, agricultural gods and gods of natural forces. This duality of origin explains the contrasts noticeable in Aztec religion as well as the complexity which gives various personalities, various attributes and various functions to the same god. Thus Tezcatlipoca appears as both the night sky, attached to ideas of death and destruction, adored by butchers and torturers, and as the eternally young god of providence. He is also the inventor of fire, the "mirror of smoke", the master of cold and ice, the god of sin and poverty, and so on.

The strange appearance the Aztecs gave their gods on the bas-reliefs and frescoes of the temples and in the paintings of the manuscripts, is no less disconcerting than the strangeness of their attributes. Never before has a people given itself such hideous or terrible divinities. Mexico did not know the beauty of Apollo, the sweetness of Christ or the smile of Buddha. It lived in a world of fantastic and monstrous figures, greedy for bloody sacrifice, brandishing human skulls or obsidian sacrificial knives, enthroned in temples flooded with blood amidst thousands of hearts spread over stones sculptured in the shape of wheels, and thousands of severed heads crowding rooms and terraces.

However, it must not be thought that a gratuitous taste for the horrible presided over these gods. Most frequently symbols which are unintelligible or which it would be wrong to explain according to European mentality are involved. Many of the images which only inspire terror and disgust, clothed the personality of compassionate and benevolent gods. The human sacrifice against which European sensibility revolts, was only a very ancient rite in general use at a certain period of human history. It would be wrong to attach to it ideas of cruelty and sadistic pleasure.

It is therefore necessary to overcome the horror and fear these divine figures at first inspire, to see what ideas are concealed behind them and the metaphysics and mythology which they incarnate. Here, as everywhere, gods of vegetation are also gods of resurrection, and, according to habitual ambivalence, are both dangerous and benevolent, propitious and ill-omened according to the context. Thus Dionysos, in the ancient Greek mysteries, was both the god of rebirth and of death, god of immortal nature and god of the underworld. Worship must be interpreted as one of the great manifestations of human thought. "Worship as such", says Walter F. Otto,[1] "belongs to the monumental creations of the human mind. To find its exact meaning it must be placed side by side with architecture, the plastic arts, music and poetry, which have all at one time been in the service of the divine. It is one of the great languages with which humanity speaks to the Most-High, and speaks solely for the reason that it *must* speak."

Approaching the Aztec gods, stranger to us than all others, our customary categories of thought and sentiment must be abandoned. We must try—not to feel, because that is impossible—but at least to understand what the inhabitants of Tenochtitlan saw in their gods.

First came Huitzilopochtli, the bird-singer, worshipped on the summit of the largest temple in Mexico, seated on a blue throne, girdled with serpents, wearing a golden mask and a necklace of human skulls. He was the god of war and, as such, fond of human sacrifices, which were offered to him with fantastic prodigality. The Aztecs only made war in order to have victims to sacrifice to their gods; they were not concerned with killing as many of the enemy as possible, but, on the contrary, with taking prisoners, who were then sacrificed with due solemnity. In other words, the wars were mild and the sacrifices murderous, but the number of dead did not exceed the victims of wars in other countries. The Spaniards who protested against this custom with such pious and virtuous indignation claimed hundreds more victims than the Aztecs.

Quetzalcoatl, the plumed serpent, was a Toltec god, related to the Maya Kukulcan. He also had very varied attributes and functions. God of the wind, god of the planet Venus, inventor of maize and creator of humanity, he was, it is said, so hideous that, one day, seeing his own image in a mirror which Tezcatlipoca held out to him, he was so disgusted and ashamed that he constantly wore a mask; this had a long and sinuous nose which may possibly designate the form of lightning. It is sometimes in the form of a bird's beak gnawing a serpent, with a helmet in jaguar skin, a large shell by way of breastplate, and a plume of black raven's feathers and red feathers from the guacamaya. Quetzalcoatl is also represented bearded and again, according to his numerous hypostases, dressed in many different guises.

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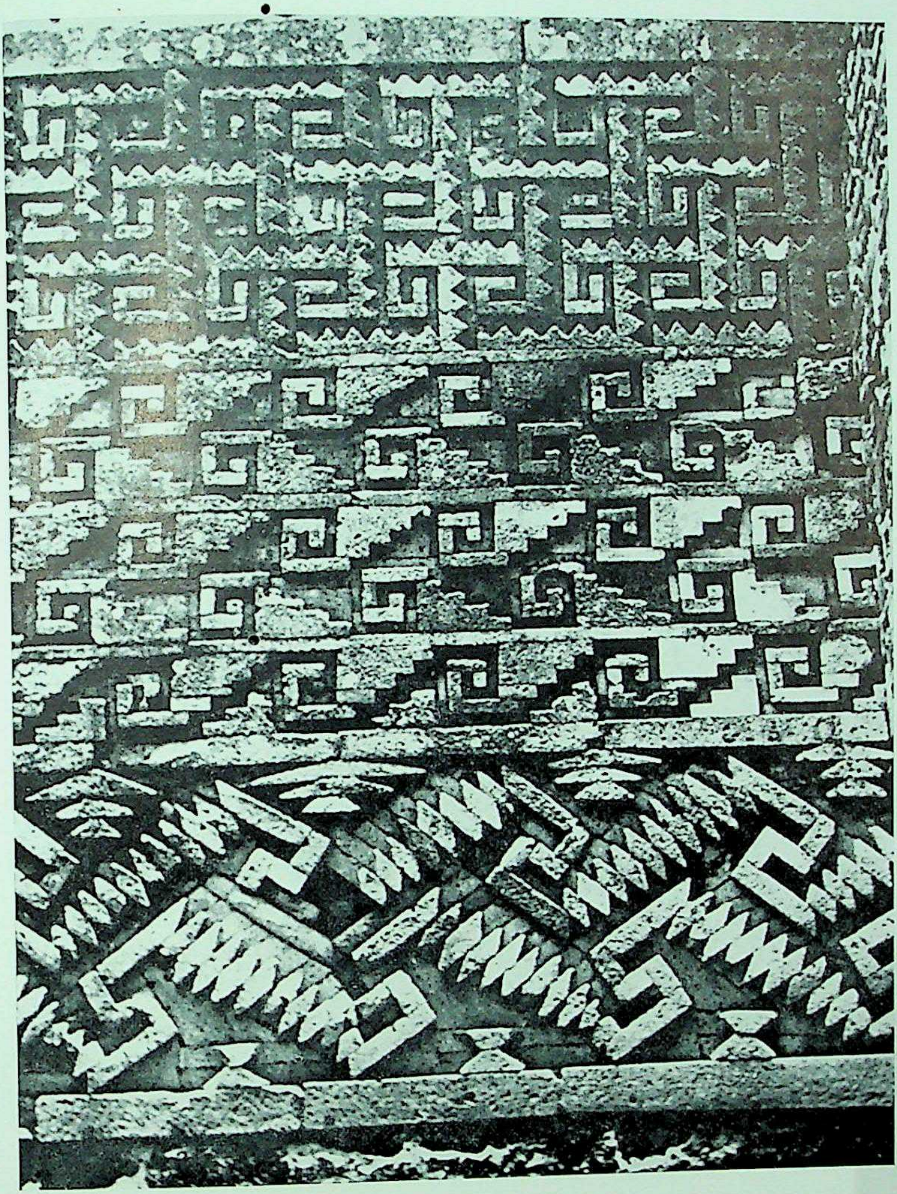
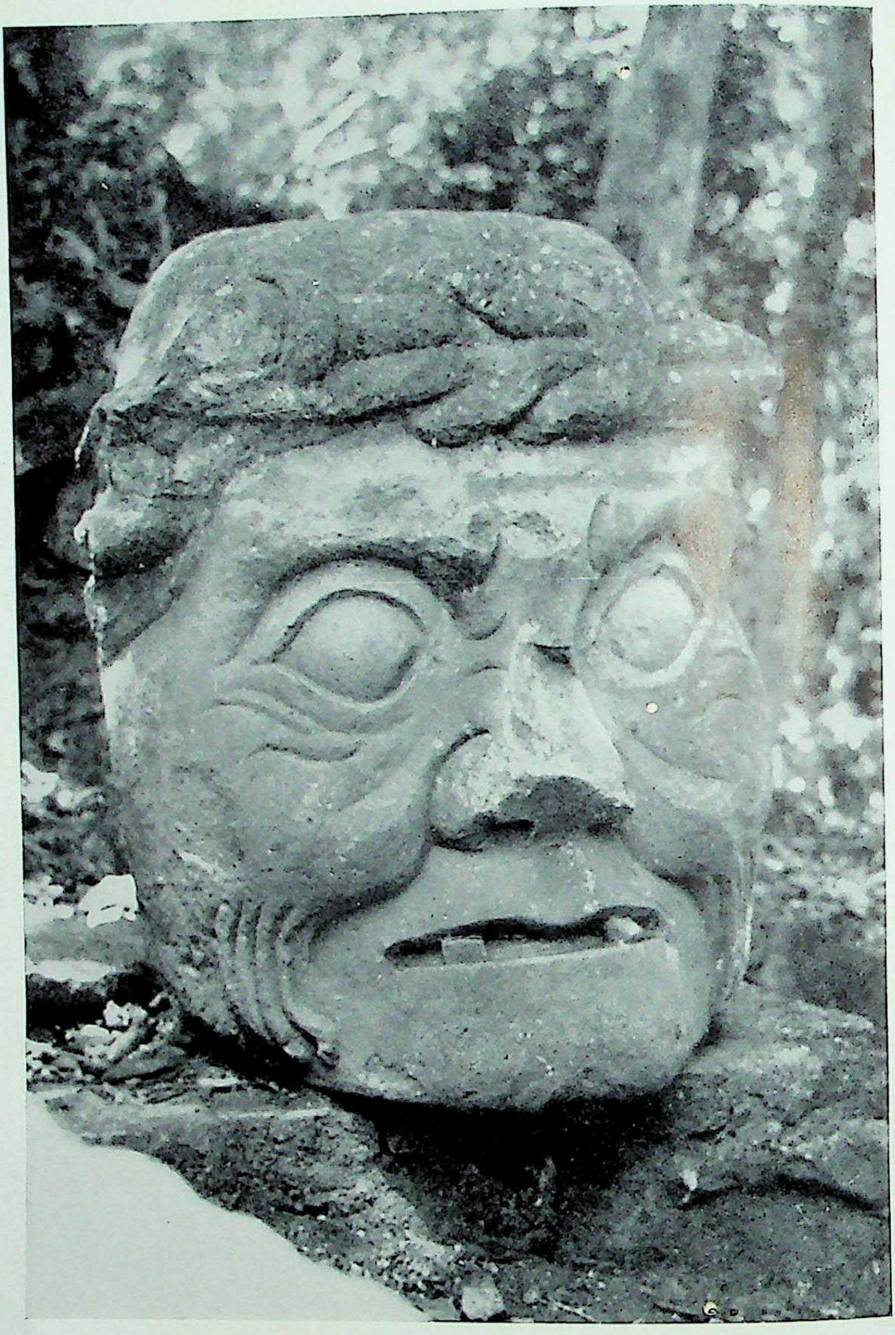
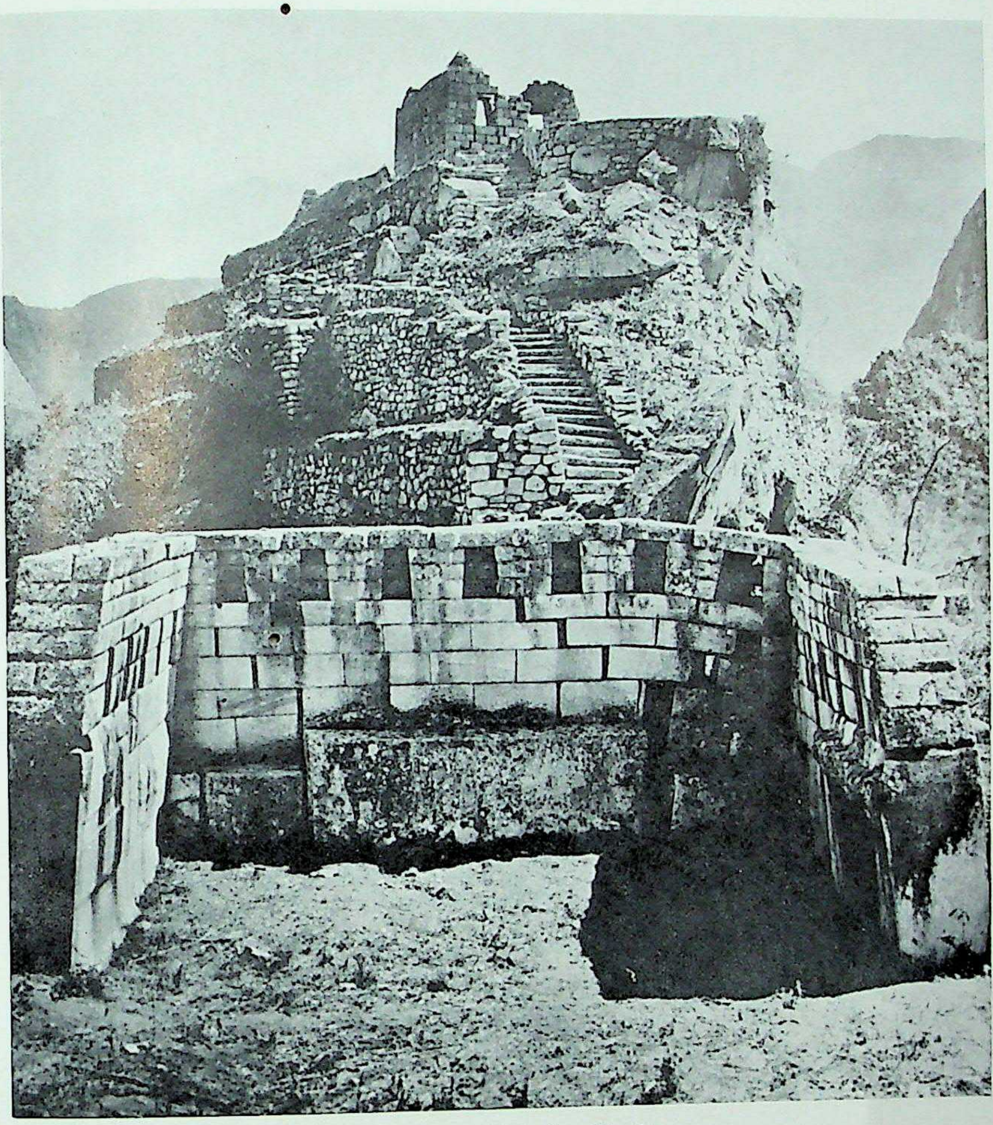
[1] *Dionysos, Mythos und Kultus*, Frankfurt am Main, 1926.



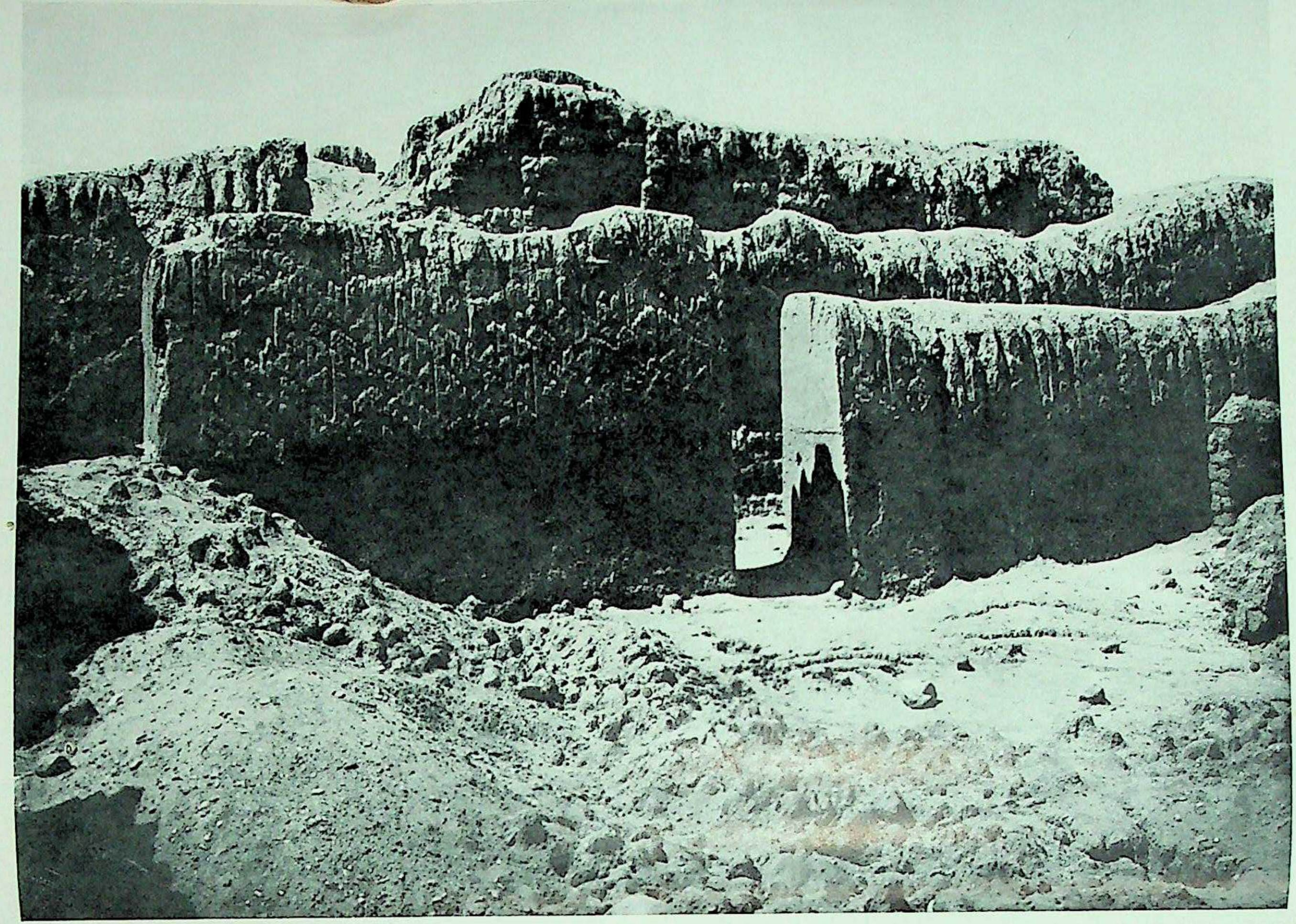
Mitla: sculptured frieze



Copan: sculpture from the north-eastern extremity of Temple II, known as "The Old Man of Copan"



Temple of Machu-Picchu



Chimu architecture, Valley of Moche, Peru

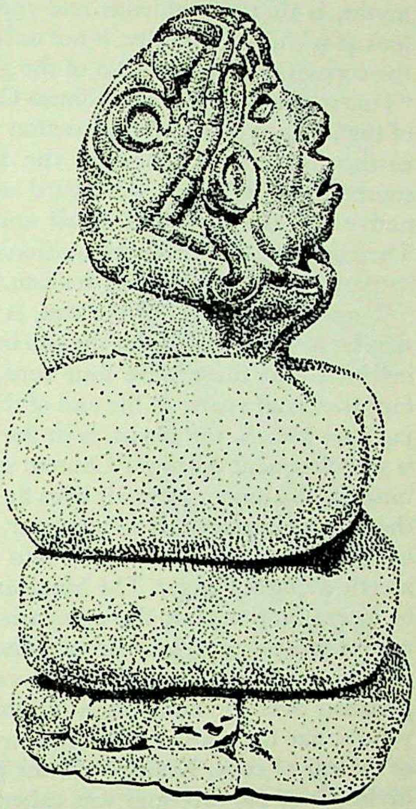


Fig. 25 The God Quetzalcoatl, Mexico

Tezcatlipoca also had different attributes. His face was generally represented tattooed with black and yellow stripes, and instead of a left foot (which he left in a door during his visit to the underworld), he carried a mirror reflecting everything that happened on earth.

The most frightful Mexican god was Mictlantecutli, the god of the underworld, with rattling skeleton and grimacing skull. His nose was sometimes replaced by a silex knife. He was generally accompanied by an escort of owls, his hallowed birds. But even he was less horrible than Coatlicue, the goddess of the earth. Her enormous statue stands in the Museum of Mexico. She is certainly the most horrible image conceived by the human brain. She wears a robe of interlaced serpents; a heavy necklace of skulls and human hands covers her breast. "Eater of filth", her feet and hands bear sharp-pointed claws. Instead of a head, her shoulders are crowned with serpents and streams of blood twisted together most horribly. But what must make us most circumspect in the interpretation of foreign myths, is that this hideous and repulsive image, which we cannot look at without a shudder, is not only that of the earth which devours the corpses of men, but also of the goddess known as "our mother". "This whole figure", says Alfonso Cano,[1] "is an admirable synthesis of the ideas of love and destruction which correspond to the idea of earth, and in this sculpture the Indian artist has realized to a supreme degree what we regard as the constant characteristic of native art, the reality of detail and the subjectivity of the whole. The figure is not the representation of a being, but of an idea, while its parts are of a surprising realism."

Tonatuih, the god of the sun, is easily recognizable by the fact that he wears the image of the sun in an obvious fashion. The Aztecs believed that there were four suns, each of which only burnt for four thousand years; at the end of this period they were devoured by jaguars. Metzli, the moon, is in the form of a hare—the lunar hare is very frequent amongst Chinese symbols also. In China this hare inhabits the moon, where it lives for ever. It is often shown crushing the drug of immortality in a mortar, certainly in memory of the hare which voluntarily threw itself into the fire to serve as food for an ascetic dying of hunger. The Mexican lunar hare is more complicated in interpretation, but the comparison deserves to be made for the sake of those who seek for proof of the Asiatic origin of American man.

Centeotl was one of the most venerated divinities, because she presided over the cultivation of maize. She was painted green and yellow, like the plant, and wore a head-dress suggesting the covering of the ear of corn. Xiuhtecutli, the god of fire, was one of the oldest divinities of the race and was called the "old god". He was offered libations at the beginning of every meal and butterflies were consecrated to him because their wings reproduced the movement of the flames.

Tlazolteotl, in his rôle of "heart of the earth", received the confessions of the Aztecs, who confessed their sins to him and went away pardoned. But as they could only make this confession once in a lifetime, they generally waited till the last moment to benefit from general absolution.

Tlaloc was one of the most important gods, as divinity of the rain, and everything attached to it, snow, rivers, lakes. As rain was necessary for the cultivation of maize, young children were offered in sacrifice to Tlaloc, to soften his heart with pity and make his tears flow. These were immediately transformed into irrigation. His face consisted of interlaced serpents. He had a blue or green body, a black face and his teeth were long and projecting; he also had a long nose shaped like a tapir's snout.

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[1] *Op. cit.*, p. 29.

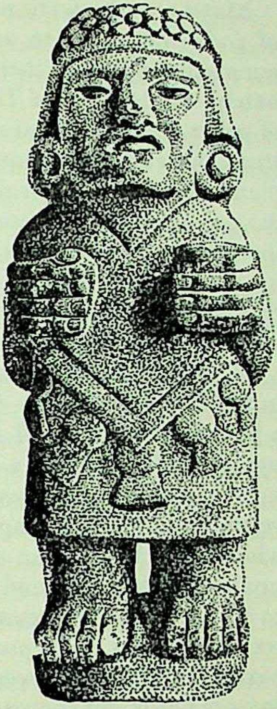

Fig. 26 Xochiquetzal, goddess of love, Mexico

Xipe was also a god of fertility. He is generally shown wearing skin torn from a human face as a mask over his own, and delighted in sacrifices during which living victims were skinned. This was not caused by savage cruelty but probably because the rite represented the shedding of the maize husk. The most pacific ideas were expressed in rites which to us seem abominably sanguinary, and this is one of the most interesting peculiarities of the Aztec ritual "vocabulary".

Finally, amongst minor divinities, mention must be made of Xochiquetzal, goddess of love, patron of sexual desire, benevolent to prostitutes and hermaphrodites. She also reigned over all terrestrial pleasures, and flowers. Xochipilli was a joyous god, who symbolized maize and was celebrated with song and dance. Octli was the patron of drinkers and ruled the world of intoxicants and drugs, a widespread phenomenon in ancient Mexico where a prodigious range of intoxicating drugs was known. A number of gods of vegetation must be added to the list, as well as local divinities, household gods and auxiliaries, who were consulted and worshipped in the various circumstances of life.

Many temples were naturally required to minister to this crowd of gods—the more so as the Aztecs, like the Romans, frequently annexed the gods of their neighbours or tributary nations. Unfortunately, the temples of Tenochtitlan are less well known than those of other regions, because they were absorbed into Mexican constructions after the conquest. Remains have been found during town planning work but it would be necessary to demolish a large part of the present town to separate them. We can, therefore, only imagine the temple of Huitzilopochtli which the chroniclers describe in all its splendour. Remains have been found underneath the Rue Escalerillas, but nothing gives any idea of the prodigious magnificence which so astonished the Spaniards and incited their greed.

The provincial temples are better known. The one at Teopanzolco, in the State of Morelos, has now been admirably cleared and offers a beautiful specimen of Aztec architecture. From 1925 to 1929, the pyramid of Tenayuca was also completely cleared. Ruins of seven super-posed pyramids were found here beneath a hill covered with vegetation. The covering of gigantic serpents painted red and blue, which must have given a most striking effect, came to light, and a smaller, older pyramid was even discovered within the large pyramid (perfectly restored) which had been absorbed in the more recent building. El Tepozteco, in the State of Morelos, has also been partially cleared and even revealed magnificent sculptures. But these can obviously not compete with the formidable row of serpent's jaws flanking the base of the gigantic pyramid of Tenayuca, one of the most intact specimens of Aztec art. It is also possible that the Aztecs voluntarily buried this monument under a hill of earth to protect it from the rage of the Spaniards and their systematic destruction.

Possibly as a result of these precautions, these *teocatli* escaped the ravages which almost entirely destroyed the temple of Tizatlan, in the State of Tlaxcala. A temple was found here still containing its benches, sanctuary and sculptured altars, which had preserved their original polychrome. The priests of Tezcatlipoca had buried them beneath the débris and this preserved them until modern archaeologists arrived. The temple of Tepotzlan, in the State of Cuernavaca, on the other hand, was almost completely destroyed by priests, who only spared a part of the sub-foundations in order to build their churches. Despite this, part of the original arrangement and remains of stucco decoration are still to be found. Finally, at Malinalco, in the State of Mexico, remains of an extremely curious monolith temple have been revealed on the sides of a hill. This contained magnificent sculpture and had an unsuspected element in Aztec art, i.e., a door cut in the rock in the shape of an arch. The arch was considered till then to be absolutely unknown to the

Mexicans, who only knew the approximate arch already mentioned. The door at Malinalco, therefore, shows that although they were incapable of constructing an arch, they were none the less able to cut it into rock.

But to complete the resurrection of the dead cities, imagination must come to the aid of the archaeologist. For perfect understanding of the significance of the Mexican temples, they must not only be represented in their organic mass, frozen in dead symbols, but as a prodigious living whole, a fantastic scene covered with gaudily painted sculptures, bristling with copal-burning incense-burners, altars where human hearts smoke, where bleeding skulls are piled. When the ceremonies they held have been reconstructed, using the evidence of the historian and the discoveries of the archaeologist, these dead monuments receive a new vitality. Think of the twenty thousand victims that Montezuma II caused to be sacrificed on the day of dedication of the new temple at Huitzilopochtli. Study the series of religious festivals in the Aztec calendar—so numerous were they that, twice a month at least, the priests and the masses flocked round a pyramid to assist at strange, magnificent and cruel ceremonies, which took place on the steps of the stairways, along the terraces, and finally, in the dark blood-scented silence of the Holy of Holies.

On February 2nd, they went to the mountains or to the artificially constructed mounds to slit the throats of children to be offered to Tlaloc, the god of rain. If this were not sufficient, the sacrifice was repeated for several months, until the day the satisfied god caused the necessary rain to fall. Three weeks later, sacrifices were made to Xipe, the god dressed in human skin. Men were rolled from the top of the steps to the base of the temple, where priests, tattooed, covered with fantastic ornaments and as bloody as butchers, quickly skinned them with their long obsidian knives. Sometimes, to give this skinning the appearance of combat, the naked victim was provided with a paper sabre and bound to a stone before he was delivered to soldiers covered with jaguar skins and armed with hunting spears and bludgeons. Sometimes also, the corpse was cut up. The priests smeared the statues of the gods with fresh blood while others sat around the human shreds and solemnly and piously devoured this atrocious food, and the victorious soldiers proudly donned the skins they had stripped off.

On April 23rd, a young man was offered to Tezcatlipoca. For several months he had lived in luxury, honour and delight, and before his death he made a round tour of the town playing the flute. Then he broke his flute on the stairway of the temple and mounted the steps to the summit to await his executioners.

On May 13th, new sacrifices were made to Tlaloc. A barque was loaded with the hearts of sacrificed victims and this dreadful cargo was thrown into the lake, together with a young man and a young girl whose deaths were supposed to delight the god of fertility.

The God of Fire had his festival on August 1st. On this occasion, red-painted warriors danced around a pile of burning faggots. They carried the prisoners they had taken in battle on their shoulders. According to ritual, at a signal from the priests, they threw them alive into the fire. They were withdrawn half-burnt, so that they should still be alive when their breasts were opened and their hearts torn out.

On September 10th, the return of the gods was awaited. To be certain of their presence, maize flour was spread on the terrace of the temple. When the first footprint appeared, that of Tezcatlipoca, the god of eternal youth, great shouts of joy rang out over the town from the heights of its gaudy towers. Then the other gods arrived one by one, each leaving the trace of his foot. Last but one came the god of fire, only preceding the god of travellers, who was inclined to dawdle and to dally by the wayside.

On October 20th, consecrated to the god of the hunt, much game was slaughtered. The victims were then bound in the same way as the stags, hoisted to the summit of the temples where the priests of Mixcoatl, half huntsmen, half executioners, killed them with sharp stone instruments.

For the feast of Huitzilopochtli, on November 9th, a statue of the god was made from seeds mixed into a purée with blood, and the king, followed by the priests, ate this horrible idol.

Women were sacrificed on certain occasions. For the Festival of the New Maize, for example, on June 22nd, a woman who had danced all night was ritually killed in the morning. There was again dancing around victims offered to the goddess of Salt, on June 2nd. The victims were decorated with flowers and led to torture amidst the song of flutes and the caperings of hideous priests. On August 21st, finally, a woman gaily attired in bridal finery and escorted by young men and young girls, led her wedding procession, impatient to meet her promised husband. Suddenly the masked priests appeared before her and dragged her into the sanctuary. Her head was cut off, her heart torn out and her skin stripped off to make a mask for the statue of the goddess.

Fortunately, all the religious festivals did not have this atrocious ending. Most of the rites comprised sacrifices, skinning, removal of the heart and sacred anthropophagic banquet. But there were also ceremonies where no blood flowed. For the festival of the goddess of maize, Chicomecoatl, for example, young girls went in procession to the temples to ask a blessing on the ears of maize, which would provide the seed of the next harvest. On other occasions, June 12th specially, dancing celebrated Huitzilopochtli. This was the only day of the year when men and women danced together.

Although these spectacles fill us with horror—because solemnities where the monstrous priests did not lean over twitching corpses were infinitely rare—the ruins of Mexico do not possess their full savage and mysterious beauty until the masses which animated them are reconstructed in the imagination. Only then do the hideous effigies, fed with hearts, and bathed in human blood, "the precious liquid", wake from their stone sleep in our museums, and the plumed serpent rustle the brilliant feathers of its quetzal and the sonorous shells of its tail.

CHAPTER IX

THE INCAS AND THE PRE-INCA CIVILIZATIONS OF PERU

When the Spaniards arrived in Peru, they were amazed to find a refined civilization which had attained such a perfect degree of social organization that the whole nation functioned like a well-greased machine. Routes ran from one end of the Empire to the other, crossing the Andes and introducing wide, well-maintained roads, with shelters for travellers along the way, into districts where only dangerous tracks might be expected.

The Spaniards methodically sacked this Inca civilization because they thought only of the treasure to be obtained from the natives. They neglected the beauty of the jewellery, only seeing it in terms of weight of gold that they hurled into the melting pots. They razed the temples to the ground and destroyed masterpieces of culture and art even more completely than in Mexico. Thus the natural destruction inevitable to all human creations had dangerous collaborators in the conquistadores, who took away everything they could carry and demolished the rest. Fortunately, the main outlines of Inca architecture, based on a monumental and colossal technique, on the piling up of gigantic blocks, resisted destruction. Today, archaeologists find remains either under constructions built after the conquest (so that the formidable walls of the Temple of the Sun form the foundations for a church at Cuzco), or in towns, perched on the summits of the Andes which are so difficult of access that some are not known except from aerial photographs. The most notable of these photographs were brought back by the Shepper-Johnson expedition which, using aeroplanes specially constructed for aerial exploration of the Andes, spotted a number of unexplored sites. These still await a visit from the archaeologists.

These towns present a particularly difficult task. Some of them, situated on summits which can only be climbed with great difficulty, are periodically re-conquered by the bush. There is also the problem of dating the remains, distinguishing what comes from the Incas and what belonged to earlier civilizations, known as Pre-Inca. But all efforts are generally recompensed when the formidable dead towns of the mountains amidst the silence of the peaks and the empty palaces are penetrated. When the marvellous fabrics of the Mazca period which pose so many aesthetic problems and enchant the eye are unfolded, and the strange and beautiful vases can be touched in which Peruvian art realized possibly its most perfect masterpieces, this is recompense enough. These vases are fairly well represented in most European museums.

Hiram Bingham's surprise the day he found the ruins of Machu-Picchu, reappears in the book which he has devoted to the dead towns of the Andes.[1] This reveals, apart from many scientific documents, the emotion which seizes the explorer on penetrating for the first time within the gigantic ramparts of a city abandoned at some unknown date.

There was Machu-Picchu, surmounting an inaccessible peak, belonging to the clouds rather than the earth, perceived with difficulty amidst the swarming tropical vegetation which even swallowed up the gigantic walls, a creation of savage and barbarous grandeur and, at the same time, a marvel of architectural technique. Wide windows in the walls opened on to the neighbouring mountains. Fantastic as the legendary burg of Graal, reigning over unexplored solitudes, built by giants for giants, Machu-Picchu poses an enigma which has never been solved, despite expeditions by the National Geographic Society and the University of Yale, and recent work by Peruvian archaeologists.

These naked buildings, deprived of all ornament (only a few petroglyphs have been found at Machu-Picchu, of unknown period and significance), impressive by their very mass, situated in this savage site amidst vertiginous mountains, possess a power of magic unequalled by any ruin in the world. Could it have been a fortress? It is possible, judging from the immense number of ramparts, trenches and bastions. A temple? This is also credible. It has been calculated that sunrise, observed from the windows of the Temple of the Three Windows, in relation to the highest of the neighbouring peaks, corresponds exactly to the solar festivals—and it is known that the religion of the Peruvians was based on worship of the sun. Finally, it is possible that the town, constructed with such perfect understanding of town planning, with its wide stairways and vast terraces, was a fortified city where the predecessors of the Incas might brave all invasion.

Discoveries at Machu-Picchu, bronze objects, vases and tombs do not convey much about the inhabitants of this town lost in the sky. Matthewson, the American chemist, has made an intensive study of the composition of the various objects and has deduced some very interesting facts about the technique of the smelters of Machu-Picchu. In another sphere, examination of skeletons found in the hundreds of tombs adjacent to the town has enabled MacCurdy to study the art of surgery amongst the Peruvians. This was very highly developed in relation to the customary level of culture of archaic races. Trepanning was in general practice. These people skilfully treated fractures and were familiar with several types of anaesthetic and antiseptic. "Out of 276 skulls", writes Magoffin,[1] "17 have been operated on at least once, and one had been operated on five times." Elsewhere, at Paracas, "beneath the rosy surface of the dunes there are still no one knows how many mummies huddled in their bundles like the unborn in the womb; mummies of rich and poor, old and young, priests and surgeons with the skill to operate on human skulls, removing injured or diseased parts and substituting for them precisely fitted plates of metal. The surgeons' instruments have been found, and cotton pads used to dress the wounds, and rolls of gauze for bandages."[2]

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[1] *The Romance of Archaeology*, G. Bell & Son, London, 1930.

The explorers of Machu-Picchu had reached this stage in their discoveries when, in 1928, on another mountain they distinguished traces of gigantic walls. It was a difficult operation to mark this new site exactly and then to reach it, but the explorers were well recompensed for their efforts when they entered the town of Huayna Picchu. This was similar to Machu-Picchu, with those colossal blocks of stone which are the principal factor in historic and pre-historic Peruvian architecture. Since then, aerial investigations have facilitated the discovery of still other remains, notably that immense fortification running along the crests and peaks, known as the Great Wall of Peru,[3] analogous to the Great Wall of China, as well as other remains at present inaccessible. It is not yet known whether these were cemeteries or ruins of towns made to an extremely strange design. Huayna Picchu probably represents an even higher stage of civilization than Machu-Picchu, with immense terraces. The ruins of Vilcabamba have not yet been completely cleared and probably hold in reserve some interesting material for the archaeologist.

This resurrection of cities in the sky is not without its difficulties. Roads have to be provided to make access to the monuments easier, and shelters have to be arranged. Above all, it is necessary to watch and prevent vegetation regaining possession of ruins so laboriously revealed. And, as men advance into the mountains and forests, new towns are seen, buried amongst the trees and rocks, mysterious towns which still await the arrival of explorers to bring them to life.

Amongst aerial ruins recently discovered, mention must be made

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[1] *Explorations in the Highlands of Peru*, London, 1922.

[2] Blair Niles, *Peruvian Pageant*, Bobbs-Merrill Co., Indianopolis, New York, 1937; John Murray, London, 1937, p. 94.

[3] Shepper, *The Great Wall of Peru*, Washington, 1937.

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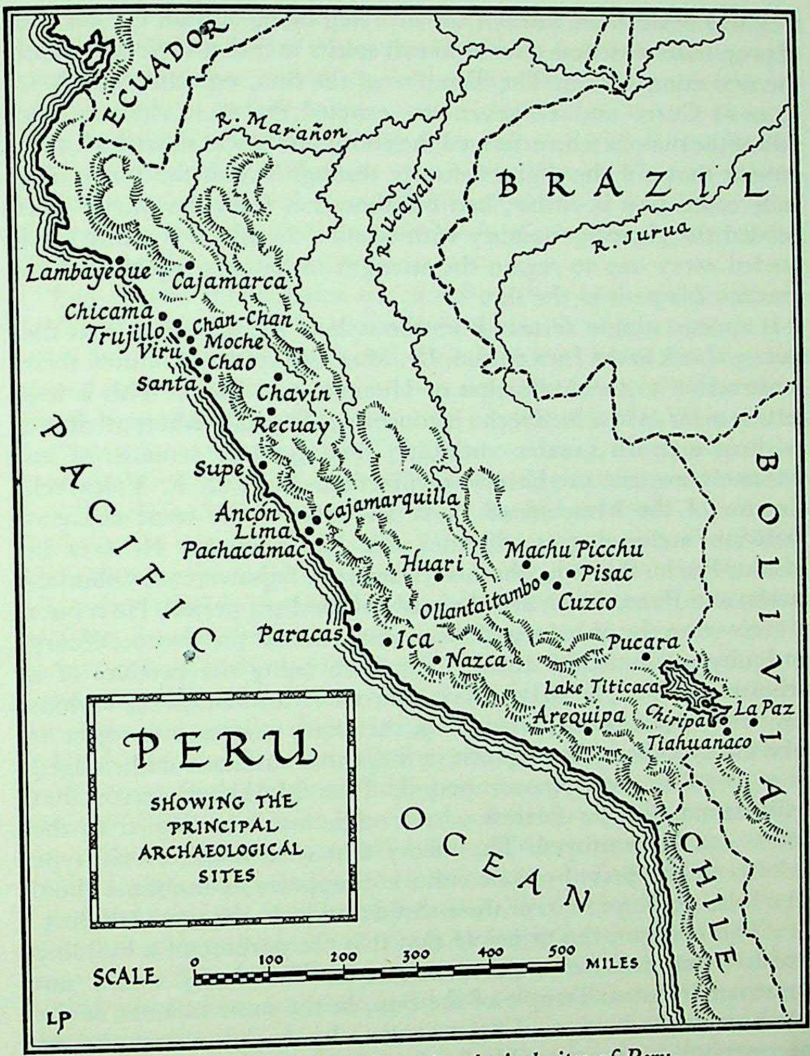
ECUADOR
R. Marañon
R. Ucayali
BRAZIL
R. Jurua
Lambayeque
Cajamarca
Chicama
Trujillo
Chan-Chan
Moche
Viru
Chao
Santa
Chavin
Recuay
PACIFIC
OCEAN
Supe
Ancon
Lima
Cajamarquilla
Pachacámac
Huari
Machu Picchu
Pisac
Ollantaitambo
Cuzco
Paracas
Ica
Nazca
Pucara
BOLIVIA
Lake Titicaca
Arequipa
Chiripa
La Paz
Tiahuanaco
CHILE
PERU
SHOWING THE PRINCIPAL ARCHAEOLOGICAL SITES
SCALE
0
100
200
300
400
500
MILES
LP

Fig. 27 Map of the archaeological sites of Peru

of the town of Cochasqui, which rises at an altitude of more than 10,000 feet, on the foothills of Mojanda. Here, terraces, stairheads and steps combine artificial embankment and the use of natural rock in a most interesting way. Remains of numerous human sacrifices were also found here. They were intended to ensure the duration and preservation of the buildings. This is a very ancient custom of almost universal use. In one particular building at Cochasqui no less than four hundred human skulls were found in the foundations. A stairway was never built without the first step being laid on the corpses of propitiatory victims offered to evil spirits to divert their fury from the new construction. The Temples of the Sun, especially, such as those at Cuzco and Tomebamba—exacted the most victims. The skill of the masons who arranged the enormous blocks so well without cement that not the slightest fissure through which the blade of a knife could pass is visible, had collaboration from the priests who flooded the gigantic masonry with blood—the blood the Sun God needed every day to regain the strength to be born again, and to continue his path in the sky.

It appears almost certain from the style of the buildings, that the ruins go back to the Inca period. Dr. Max Uhle even attributed their construction to the Atahualpa or Huainacapac Incas.[1] This is less certain as far as Machu-Picchu is concerned. Several authors attribute to them a much greater antiquity, finding there remains of an extremely ancient pre-historic civilization. Dr. Luis E. Valcarcel, director of the Museum of Lima and one of the most eminent Peruvian archaeologists, disputes this latter theory. He sees in Machu-Picchu the same characteristics as at Sajsawaman, Ollantaitambo and Pisac, which are obviously of the Inca period. He refuses to recognize in the megalithic constructions the extraordinary antiquity attributed to them. "Far from being the product of a primitive period", he writes, "it is only one style amongst the various fashions of Inca construction. It is, therefore, necessary to reject as false the hypothesis that gigantic or megalithic architecture belonged to a megalithic or gigantic period. Thus Markham's error that Sajsawaman was 'a fortress whose origin was not known to the Incas' can be destroyed. The theory that each architectònic type belongs to one period or one culture disappears at the same time. The Incas employed two or three distinct styles in the same building. . . . This confirms the principle that it is the purpose of a building which determines its architectonic style. The Incas would not construct Intiwasi, Temple of the Sun, in the same manner as the northern triple bastion of Sajsawaman. In the latter case, it was necessary to employ great blocks of stone to protect the weakest side of the town. . . . Overlapping styles do not necessarily signify overlapping cultures, as the interior walls of Sajsawaman demonstrate."[2]

This fair and interesting distinction should be remembered and used as a guide to determine the age of a Peruvian building. Tradition and imitation of ancient models often result in the continuation of certain styles, which do not correspond exactly to period or milieu. Thus archaic survivals are frequently found, and

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[1] *Revista del Museo Nacional*, Lima, 1937.

[2] *Revista del Museo Nacional*, Lima, 1934.

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not only in Peru, in highly developed periods. These survivals have been maintained for very varied religious or aesthetic reasons, and caution is therefore needed against always attributing an object of archaic form or technique to an archaic period.

If doubt still exists concerning the aerial towns of the Andes, the archaic civilizations of the coast are better known. They have been the object of study ever since the first archaeological discoveries in this region. Beuchat had already clearly distinguished them in his *Manuel d'archéologie américaine*.

The coastal civilizations do not show the same extraordinary architectural power of the mountain towns. The inhabitants used stone less than adobe mud and their buildings have therefore not shown such resistance to the inclemencies of climate. On the other hand, they reached perfection in the applied arts and their fabrics and pottery are masterpieces. They were not Incas, but belonged to a prehistoric civilization, different from the Quichuas, and probably going back to the Aymaras. The latter would have built the ruins of Tiahuanaco and the tombs called Chulpas, at a period which Max Uhle dates at about 1,500 years before the Incas flourished. Max Uhle also found the tombs of a race analogous to that of the Changos of Chile in the neighbourhood of Lima, contemporary with the coastal culture of Peru, and known as Ica or Mazca. However, they were very different in technique and spirit. They would have been supplanted by civilizations coming from the east and north.[1]

Dr. Tello, for his part, distinguishes three stages in Peruvian civilization: firstly, the megalithic period or Andean archaic (to the south of Tiahuanaco, to the north of San Augustin); secondly, the period of development and differentiation of the cultures of the coast; lastly, the period of the confederation of the tribes which culminated in the Inca confederation. He divides the periods of culture into: a primitive period up to A.D. 200; an archaic period, from 200 to 800; a pre-Inca period from 900 to 1150; and the Inca period proper from that date up to the destruction of the empire by the Spaniards.

The distinction between the coastal civilizations and the civilizations of the interior is also well noted by Means, who points out that, simultaneously with the flourishing of the first cultural period at Tiahuanaco (which he calls Tiahuanaco I), two distinct and different cultures developed on the coast, that of Chimu and that of Nazca, which he designates by the terms Chimu I and Nazca I respectively. (There are also pre-Chimu and pre-Nazca stages of culture which are at present the object of research by archaeologists and aestheticians, just as there is probably also a pre-Tiahuanaco.)

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[1] Uhle, *Los Origines de los Incas*, Buenos Aires, 1912.

The two regions would then have been united, at least culturally, for three centuries corresponding to Tiahuanaco II. This unity was succeeded by a period of anarchy lasting two centuries, after which the descent of the Incas, coming, some say from Tiahuanaco, others from Machu-Picchu, restored order.[1]

We are reduced to conjecture as far as dating these Peruvian cultural periods are concerned, because the inhabitants did not have that passion for chronology which drove the Maya to erect date-monuments in the forest and to cover their temples with numbers. Neither are there the geological references which are so useful in the history of ancient Mexico. There are certain sequences in architecture and particularly in ceramics, but it is at present still impossible to give them absolute value and particularly to mark their starting and finishing points by certain dates. Objects from the archaic period are found in relatively recent buildings, vases from Tiahuanaco, for example, in the Inca ruins of Cuzco. But this proves nothing. All that has already been said regarding the persistence of megalithic style through the whole length of Inca history proves that too great importance must not be attached to the localization of style in time. The strangest hazards have also led to the discovery of antique objects in the most unexpected places. Thus, an obsidian sacrificial knife, clearly of Maya origin, was found one day in the Thames. The world was lost in speculation as to how it got there. Then it was found out that a boat from Honduras some time earlier had unloaded its merchandise, amidst which chance had placed this unexpected tool. The discovery of an obviously archaic vase in a recent terrain does not prove that its particular technique and art-form are still in use, but only that the vase has been devoted to a ritual purpose or even that a collector has preserved it for his own pleasure.

The great coastal capital, called Chan-Chan, was the centre of Chimu civilization. It seems that the king of Chan-Chan bore the title of Grand Chimu. Earth tremors destroyed this town, which accounts of Spanish chroniclers present as a veritable Eldorado. The rain which fell in torrents for some years completed the work of the earth tremors by drowning the last remains of Chan-Chan in a sea of mud. Scarcely anything has been found except the outline of the squares and streets and the design of the houses. Furthermore, these must have been built less strongly than those of the aerial towns, either because of lack of raw materials or because, the Chimus, accustomed to earth tremors, constructed fragile houses such as those of the Japanese. Chan-Chan must therefore have been built of adobe clay, and the houses decorated with reliefs in polychrome stucco, with the most attractive effect, but of which unfortunately almost nothing remains. Here, as at Nazca, the tombs have provided the most valuable booty. The Peruvians, in fact, were accustomed to bury their dead in very curious tombs known as chulpas, and huacas in the shape of pyramids with storeys, where the mummified corpses were perfectly preserved. This has enabled studies to be made of the racial peculiarities of the Peruvians, their strange custom of deforming the skull, like the Maya, and their surgical technique. The tombs have also yielded a great abundance of vases and fabrics which are today the best means of investigation of Peruvian civilization.

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[1] Means, *Ancient Civilizations of the Andes*, C. Scribner's Sons; New York, London, 1931.

The Chimu civilization, as it is found at Chan-Chan, and in the dead towns of the valley of Trujillo, Santa, Chao, Viru, Moche, Chicama, and Cupisnique, was not of Inca origin such as that of Cuzco, nor of Aymara origin (e.g., Tiahuanaco) but of Yunca origin. These Yuncas or Chimus would have landed at Peru in boats made of reeds. Their pottery, which is their most remarkable product, succeeded the white pottery of the Incas and inaugurated the characteristic zoomorphic and anthropomorphic ceramics which make Chimu vases one of the most curious elements in the history of art.

These surprising figures are fairly numerous in the large European museums. They describe a whole race of men and animals, with striking veracity, in the ordinary acts of life: a traveller borne in his litter by slaves, old women crouching in meditative posture, Indians looking out with sombre serpent-like eyes, men who seem to be in atrocious agony, others plunged in impassive serenity, mothers suckling their children, dwarfs and monsters, and dropsical and goitrous subjects. There are also sad-faced monkeys, dogs who seem to be on the very point of barking, birds on the verge of flight, frogs and lizards. There are even fruit and vegetables, gourds, potatoes and ears of maize.

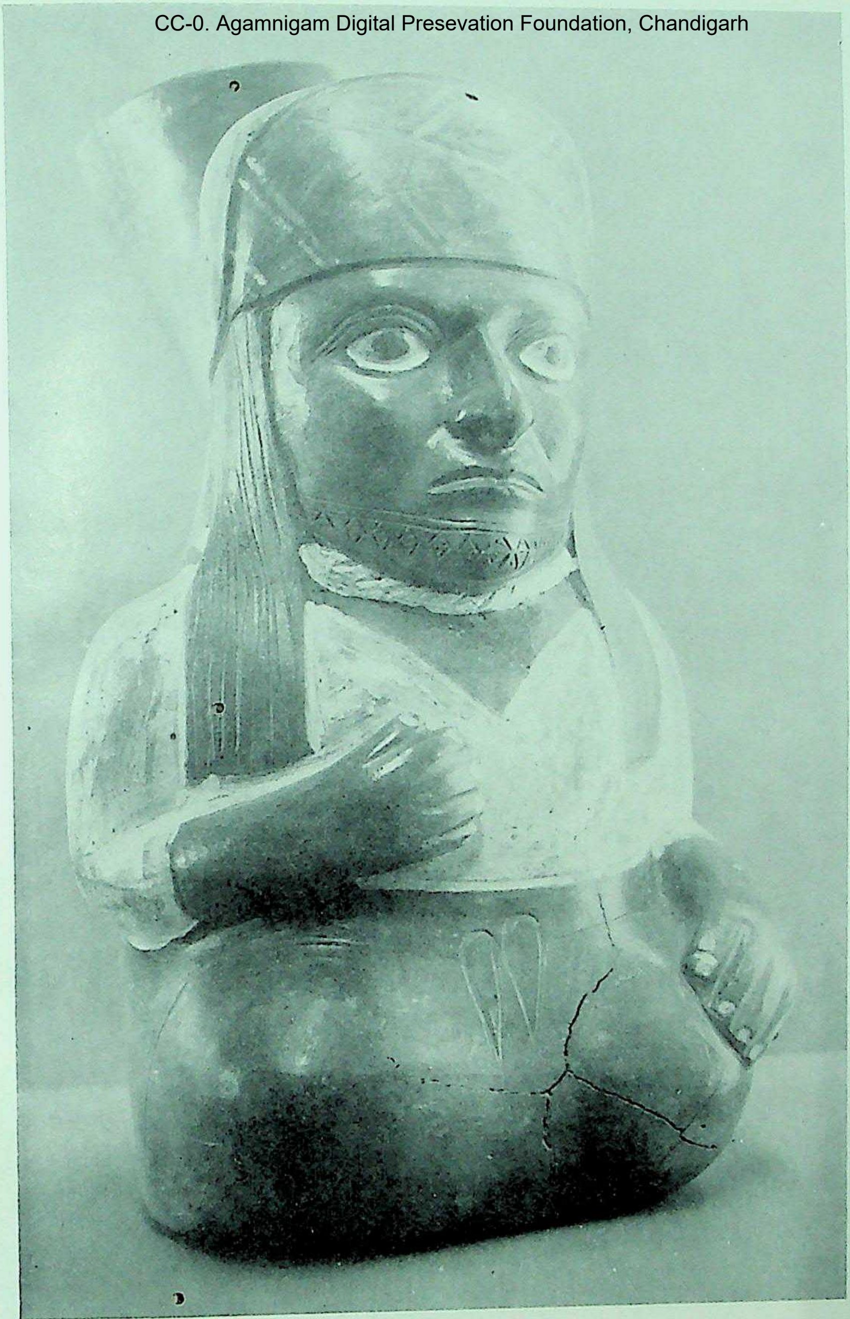
It is wrong to talk of decoration. What we have here is a veritable plastic art in relief, which has borrowed the technique of the potter to produce masterpieces of naturalistic art. Admirably modelled and magnificently coloured to emphasize the stupefying veracity of the figures, this art attains a rare peak in its psychological representation of character. The vases at Moche particularly show a vivacity of expression which has never been equalled either in picturesqueness or beauty. This might almost be taken for one of the perfect moments of Egyptian sculpture, when it had abandoned hieratic formalism in favour of the direct observation of the individual. This surprising gallery of types does, in fact, evoke a race of scribes, slaves, boatmen and harvesters, buried around the corpse. Next to effigies of generals and kings, armed with heavy clubs, wearing elaborate helmets, and flaunting menacing smiles, we find a whole crowd of beggars, vagabonds, the blind with empty eye sockets and legless cripples. Here, lusty laughter rings out; there, the painful contractions of the sick, obsessed with unbearable neuralgia after recent trepanning; elsewhere a clown's grimace, or the calm gravity of a man beyond suffering or joy.

All this is contained in the plastic art of Moche, which Valcarcel has studied in a remarkable book,[1] illustrated with photographs which reveal in all their complexity and moving grandeur the creation of the Chimu potters (or proto-Chimu as Max Uhle would have it). Moreover, this art is not strictly naturalistic. It also includes fantastic figures, composite animals, men with birds' beaks, women who look as if their faces are going to change into cats' at any minute, and, particularly, surprising conversations between men and beasts where fantasy is added to observation and naturalistic fidelity.

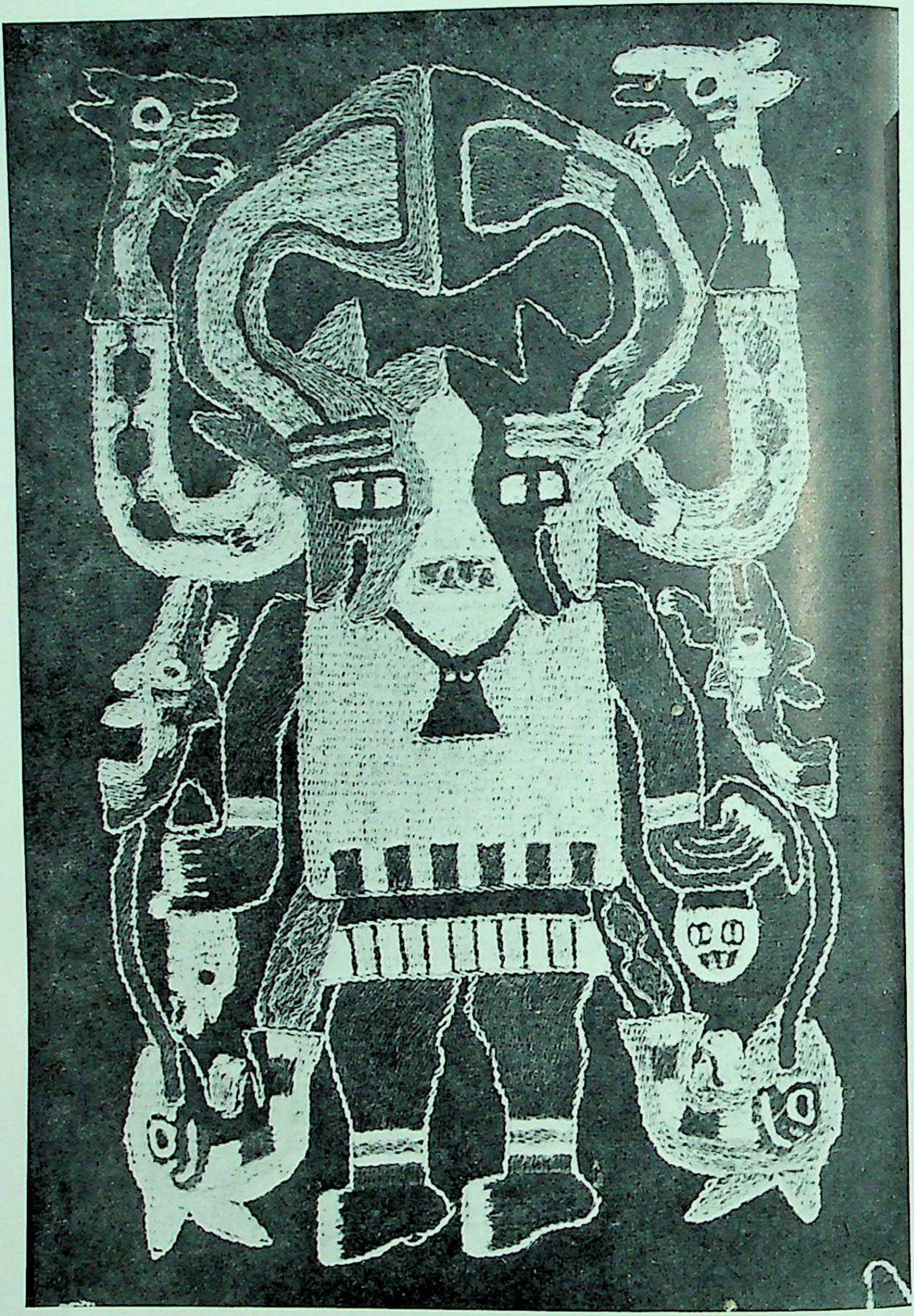
The Nazca culture represents the southern portion of the pre-Inca coastal civilization, and its principal creation was also pottery. But instead of delighting in vase-portraits such as the northern Chimus, Nazca ceramists preferred pure decoration. It was not naturalistic, and the choice of fantastic forms often resulted in a very strange abstract decoration. It is interesting to catch the transition from the representational style to the non-representational or illusive style here—as in the different periods of Susa ceramics, where the passage from the living form to the abstract diagram is easily recognizable through the stages in the metamorphosis. The Nazca pottery does not possess the astonishing plastic beauty found in the north, but is nevertheless very interesting, by the comparisons it suggests with the styles of Tiahuanaco and Chavin. In fact, some Nazca goblets show the same deformations and stylizations as on the famous stele at Chavin, which presents so many problems to archaeologist and aesthetician. It is also distinguishable by the ingenuity of its thematic vocabulary, the beauty of its colouring, where black and red are dominant, and by that richness of fantastic invention equal to that of the Chinese bronze-founders of the archaic period.

Whereas Chimu potters moved in the realm of objective and living reality and preferred the round as a means of expression, Nazca potters remained in a world of fantasy and dream, of pure invention or intellectual interpretation. Thus, an art in two dimensions which borrowed neither form nor colour from the visible world was better suited to painting, which stylized human or animal figures as it pleased and carried the spirit of abstraction to a degree only encountered at Elam.

[1] *Ancient Peruvian Art*, Vol. I, Lima, 1937.



Mochica ceramics, Huacas at Moche, Peru



Embroidered fabrics, Paracas, Peru

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The same characteristics are also found in the art of the Peruvian weavers, whose creations, either in strictly geometrical and non-representational compositions, or in stylizations of human and animal figures, are magnificent. The very colouring of these fabrics (their freshness and lustre have not changed during their long sojourn in the earth), the abundance of themes, and the prodigious ingenuity of combinations which turn the human face or even the simple motif of the "stairway", into innumerable variations, make them one of the most surprising and most admirable examples of pre-Inca coastal art. The fabrics were buried in the tombs, wound round squatting mummies.

Pachacamac, which comes between the two cultures Chimu and Nazca, shared in both. It was a prodigiously beautiful town, where the Temple of the Sun is said to have risen on an enormous pyramid, while other temples were scattered in the city. Almost indecipherable remains are all that is left today of this splendour. The fame of Paracas is almost legendary but scarcely anything has been found intact there except the tombs. However, these are so valuable for knowledge of the Peruvians that they present an almost inexhaustible object of study. Tello discovered immense cemeteries at Paracas which have still not been completely explored. The custom of burying the dead, mummified, enveloped in numerous fabrics, accompanied by important funeral furnishings, has yielded magnificent discoveries. All the anatomical peculiarities of the ancient Peruvians have been studied from the hundreds of skeletons thus examined, their custom of attaching a sort of funeral mask to the mummy, sometimes consisting simply of a silver nose planted in the middle of the face. Artificially deformed skulls were also found there, elongated towards the top, or flattened. This custom corresponds to some unknown belief, probably religious, but possibly simply social, which might imply a certain snob-value attached to deformation, or the desire of lower classes or nations to imitate the racial peculiarities of superior races, by exaggerating them.

Everything relating to death had great importance for the Peruvians both in the Inca and the archaic periods. Study of the tombs confirmed what the Spanish chroniclers said about their funeral rites. The royal tombs were carefully concealed, but not too deeply buried for the mummies to be extracted when custom decreed that they be exposed. For the festival of Inti Raymi, they were aligned on a terrace facing the place where the sun rose. They waited there, in their jewellery and their thick robes, for the appearance of the heavenly body. They were also offered meals of meats, or engaged in solemn or familiar conversation amongst themselves, using the intermediary of an interpreter, in which buffoons sometimes joined.

On the day of the festival of the Sun, the royal corpses were taken from their tombs and driven, in a fantastic sumptuous and macabre cortège, to visit the temple of the Father-God.

As far as the coastal civilizations are concerned, the work of the Peruvian archaeologists has also been directed towards the site of Nepana, whose importance becomes increasingly obvious every day. "On the coast of Central Peru," writes Dr. Luis E. Valcarcel,[1] "slightly to the north of Lima, the valley of Nepana extends from the Cordillera to the sea, and is devoted to a large extent to the cultivation of sugar cane. As in nearly all the coastal valleys, there are many hills which appear to be natural and interrupt the uniformity of the agricultural plain. These are the *wakas*[2] or tumuli which the population of former times erected to bury their chiefs, sometimes putting small buildings on the summit, designed for worship but also serving for strategic observation. Dr. Tello, informed of certain chance discoveries there, undertook complete exploration at the end of September, 1933. This resulted in the very interesting discovery of super-posed architectonic foundations, corresponding to distinct periods of pre-history. The presence of the Chavin style in the deepest layer confirmed the hypothesis, well known to Dr. Tello, of the greater antiquity of Andean civilizations, as opposed to archaeologists who maintained that the coastal civilizations were older. At a depth of about 16 feet a sort of platform appeared, made of crude bricks covered with rough clay on which beautiful sculptures had been stamped in relief, reproducing stylized animals extracted from Chavin ideography; the feline and the condor, stylization of which appears here in a powerfully original manner. This first discovery was made at the pyramid called the 'White Hill'. The other, called Punkari, contained valuable stucco ornaments in various colours, columns, stairways, platforms, and a large clay sculpture of a feline similarly coloured."

The monuments of Tiahuanaco, geographically placed in Bolivian territory, but belonging historically to the history of Peruvian civilization, remain one of the major enigmas of archaeology. Their extreme antiquity, the strangeness of their decoration, the powerful and savage beauty of the architecture, which cut vast doors in blocks of monolithic rock, and covered them with mysteriously symbolic designs, has long attracted the curiosity of travellers and scholars.

Mystery has long surrounded the remains of Tiahuanaco. Even recently, it was claimed that there were two Tiahuanacos, one an entirely underground town which had till the present escaped the research of archaeologists. Little is also known of the Aymaras, who left equally imposing and disturbing ruins near Lake Titicaca, at an altitude of about 13,000 feet. Certainly, all the archaeological remains of Bolivia which might supply information on this unknown people have not yet been exhumed. It is probable, however, that Tiahuanaco holds proofs of the most ancient Peruvian civilization, of indecipherable antiquity, which the most conservative estimates date at least fifteen centuries earlier than Inca civilization. Tiahuanaco seems in fact to belong to that strange megalithic period, of which there are numerous remains in Bolivia, which erected dolmens, menhirs, tombs in covered paths such as those in Brittany and Ireland, and of which the monolithic monuments of Tiahuanaco, the steles of Chavin and the statues of Pucara constitute only the decorative stage.

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[1] *Nouvelles découvertes archéologiques au Pérou*, Institut des Etudes américaines, Paris, 1938.

[2] Also written: *huacas*.

The combination of massive megalith and ornament is in fact singularly characteristic of the Tiahuanaco civilization. All the old megalithic architecture, which cut in solid rock and only used the effect of masses, remains in these gigantic palaces, colossal steles and large-scale statues. But at the same time, an extremely subtle, abundant and strangely intertwined decoration, as if it were reproducing prototypes in fabric, covers the vast surfaces and lends them a quality of sombre and static violence. This remains one of the most disturbing phenomena in the history of art. To build these palaces, temples and terraces, the people of Tiahuanaco had only stone tools at their disposal; at the most, they sometimes but very rarely used copper clamps. Despite this, enormous blocks weighing several tons were put in place, without it would seem the slightest difficulty, adjusted most precisely without mortar, and finally sculptured with exquisite and powerfully expressive art. The famous monolithic door of

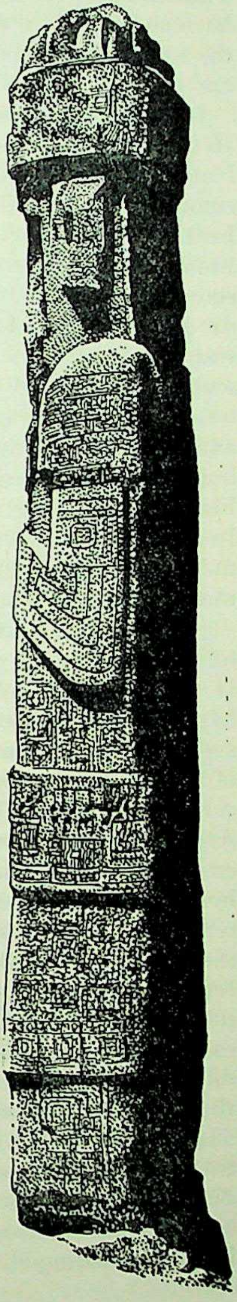

Fig. 28 Sculptured stele, Tiahuanaco, Bolivia

Tiahuanaco, and the statues originating from that region which can be seen in the Museum of La Paz, are universally known, but the marvellous surprise of first discovering the architectonic vigour and overwhelming force of the ensemble is indescribable.

Joyce well describes these ruins as great monoliths, rising at some 16 feet the one from the other, recalling the stone circles of Europe. However, recent excavations have demonstrated that they were connected by a wall made of blocks of stone and without mortar. Entrance to the enclosure was by a stairway with monolithic steps, situated in the centre of the eastern side. Inside the enclosure, the stairway gave immediate access to a rectangular depression. Opposite it, to the east of the great enclosure, a smaller square enclosure was constructed in the same manner but with grotesque heads sculptured in relief on the columns supporting the wall. To the west of the large enclosure, there was a third of intermediate size and presenting a double wall; in the north-west corner, a small building with three compartments similar to cells was erected. Finally, two smaller enclosures were furnished with stone passages. In the north-west corner of the large enclosure rises the famous monolithic door which in Joyce's view is the most remarkable monument in all ancient America.[1]

Joyce is right. This door is cut in a single block, weighs about nine tons and is covered with geometric or stylized bas-reliefs (it has not as yet been possible to decipher its secret, though numerous hypotheses have been advanced). Above the lintel is the face of a god or monster, strangely deformed so that the face is a collection of features where abstract transcriptions of bird and animal shapes can be recognized. The body is covered with heads of stylized pumas, serpents, birds, fishes, which possibly represent jewels or motifs of embroidery. The puma here plays almost the same rôle as the serpent in Mexican monuments. It is sometimes found in naturalistic representations and sometimes stretched out, twisted, elongated or shortened. The intellectual refinement of these varied and ingenious representations merits quite as much admiration as the boldness of the builders who sought out these monoliths in distant quarries, extracted them, skilfully cut them, transported them with great difficulty to the site of erection, and then adjusted them so minutely that the joints are sometimes invisible. The gigantic technique at Tiahuanaco arouses legitimate enthusiasm, but the art of Tiahuanaco merits still greater admiration. It constitutes a point at which direct expression, losing none of its savage and wild violence, achieves an extremely elaborate and intellectualized decorative language, adding all the resources of abstract vocabulary, so stimu-

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[1] See Radin, *op. cit.*, p. 103.

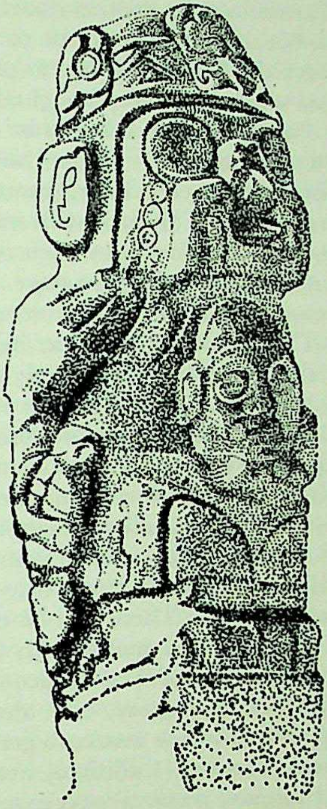

Fig. 29 Stone statue, Pucara, Peru

lating to the imagination, to the type of architectonic virtuosity which juggles with giant blocks.

The art of Tiahuanaco is essentially hieratic. This can be seen in the statues, which reject facile representational beauty and prefer the massive, intense and vigorous concentration of these thick-set figures, imprinted with solemn and fearful gravity, their faces distorted in geometric or allusive masses. This severe grandeur, disturbing because we do not know how to interpret it, gives to all this art an enigmatic quality which can still be called "the secret of the Amayas" and to which archaeologists still vainly seek the key.

It may possibly be found when the relationship between the various sites on the high Bolivian plateaux has been discovered and the bonds of cultural unity traced between Chavin, Tiahuanaco, Pucara, Titicaca and Kacha-Kacha. Muelle's interpretations of the famous stele of Chavin[1] already show its affinity with the style of

[1] See the study by Jorge C. Muelle, in *Revista del Museo Nacional*, Lima, 1937.

Tiahuanaco. In another quarter, Valcarcel recently discovered steles at Pucara which could be compared to those of Chavin. Here and there the fish *suche* seems to play a large rôle as a decorative theme and undergoes every imaginable stylized deformation.

Pucara also promises to be one of the richest and most abundant sites. Since 1925, Valcarcel has continued to make the most valuable discoveries there; firstly, the great stone stele[1] "with symbolic figures in the form of animals with something aquatic about them, serpents and fishes. I have also seen the colossal stone statue of a mythical anthropomorphic personage, with a feline mouth, carrying his weapon in one hand, a human head in the other."

This statue, over six feet high, an even stranger one of a woman without a head, and strangely represented sides (she may be intended as a skeleton), and finally a stele of enigmatic design, which has a silhouette reminiscent of Chinese monuments and bears numerous aquatic symbols, serpents, tadpoles, fishes, an undulating motif which must represent the waves, and the double circle which is the theme of water—all these emphasize the fertility of Pucara. Ceramics of singular beauty have been discovered there, reproductions of which accompany an article by Luis Valcarcel in the *Illustrated London News*.[2] These incised ceramics, in rich polychrome, associating geometric motifs with figures of birds, felines and serpents characteristic of Tiahuanaco art, may mark a bond, on one side, with Nazca pottery, and also recall that of Marajo. Valcarcel's hypothesis which invokes a great migratory movement, transporting ideas, customs, traditions, aesthetic forms, decorative themes and techniques, receives most ample confirmation

There are probably several strata of different cultures at Pucara, and their sequence will be established one day. Resuming his 1925 excavations, which only bore on the upper part of the site, Valcarcel discovered an accumulation of extraordinarily fertile super-posed remains. "Ten years later, I once again traversed the region", writes the eminent Peruvian archaeologist,[3] "and found a more abundant quantity of statues, steles and the first fragments of very ancient ceramics. With this new data, accompanied by Dr. Tello, I recently undertook explorations there and succeeded in proving the existence of thick layers of detritus, with a rich content of fragmentary archaeology in ceramics, stone and bone, under other alluvial beds. In only two days' work, directed by Dr. Tello and myself, at various sites, we gathered a magnificent harvest. As far as first impressions enabled us to judge, this was a civilization from a very remote primitive period, whose relationship with Chavin and Tiahuanaco civilizations (at the most remote period of the latter) appeared close. It is easy to imagine the importance which this centre will acquire (excavations are proceeding slowly) when its buildings and tombs are brought to light."

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[1] *Nouvelles Découvertes*, p. 10.

[2] April 3rd, 1937.

[3] *Nouvelles Découvertes*, p. 10.

A very curious type of chulpa has been found at Kacha-Kacha. Squier, Uhle, Urteaga and Chalons offer varying hypotheses regarding its antiquity. However, it is now agreed that it is less ancient than Tiahuanaco, but earlier than the Inca period. It retains some features of the megalithic style and possibly represents the point of union between the latter in its archaic form and the new meaning it received in Inca architecture. Whatever the explanation, Kacha-Kacha is a source of precise information on the evolution of art and technique from the dark periods of the archaic style (of which Tiahuanaco, Pucara and Chavin already represent the developed stages) and the arrival of Peru at its historic period when the Incas entered the picture.

The fact that the Incas retained the principal elements of the techniques and art of their predecessors proves to what extent the Aymara, Yunca and Chibcha elements, which they supplanted politically, had left their traces in construction methods, the art of pottery and weaving and in the aesthetic conceptions of their successors. It might even be said that the Inca period proper was less fertile than the archaic periods which preceded it. But this may be unfair. Inca civilization was carefully and methodically destroyed by the Spanish conquerors. The archaic ruins and tombs most frequently escaped the ravages of their stupid rapacity. Their enthusiastic excavations of palaces, temples and tombs, which even led them to discover offerings of golden objects which the Peruvians had dedicated to the sun and placed in hollows of rocks, have left but few discoveries for modern scholars. Sites which by some chance were unexplored by the conquistadores, or *huacas* which escaped their investigations, together with the descriptions of the ancient authors, are the only sources of knowledge of the fantastic wealth with which the abundance of gold so profusely endowed the whole Empire of the Incas.

One recalls the fabulous price by which Atahualpa acquired his liberty—refused, moreover, as soon as the ransom was paid: a room full of gold, the height of a man. The art of the Peruvian goldsmiths added the most perfect technique and the most refined taste to the market value of the precious metals. This can be seen in the Lambayeque treasure, discovered in 1937, and since installed in the Museum of Lima. This treasure outshines that of Monte Alban, and rivals the most sumptuous discoveries in Egypt and Mesopotamia. The Museum curator gives some idea of the richness and beauty of the objects found at Lambayeque, belonging to the archaic coastal civilization, in his description of some of the magnificent pieces: "Firstly a golden idol, weighing one kilogram, 40 centimetres long and 15 wide. It represents a deified human being equipped with wings and wearing a filigree crown or halo. It is standing with its arms on its breast. Its attitude indicates that it is offering a libation although the cup is missing. A knife in the form of a half-moon, or *kumi*, is welded to the base of the idol. Very probably it represents the personage who protected the towns of the Chimus, because a tradition is known whereby its effigy, 'Llampallec', was an object of worship and placed in the principal sanctuaries which were consecrated to it. Two other idols, without the beautiful turquoise ornaments shooting out their fire found in the first, and the other sumptuous details, are further representations of the same personage. Then comes a lot of golden vases of magnificent manufacture. On three of them, the motif of the idols is repeated. Two have encrustations of turquoises. The smallest are 211 millimetres high, 175 millimetres in diameter at the mouth and 115 millimetres in diameter at the base. Apart from these, there are metal blades, with figures in relief, for decorating walls, small leaves which were sewn as decoration on clothing, drums and small bells, clasps, small spoons, funeral masks, spheres for necklaces, some balls and pearls, as well as numerous other silver and copper objects. All this sizeable collection, of considerable archaeological, artistic and intrinsic value, belonged to the Chimu area, where this civilization developed right up to the period of the Incas, who reduced the Chimus to servitude and utilized the acknowledged skill of their gold and silver workers."[1]

The sculptures on turquoise recently discovered at Pikillajta, the funeral treasures of Ollantaitambo, where the typical Inca vases appeared for the first time, in wood with encrustations of colours, called *keros*, the treasures of Titicaca, extracted from the rocky slopes where they were placed as offerings to the sun and composed of *llamas* in leaves of gold, silver bowls encrusted with malachite, and the innumerable discoveries made at Kenko, Janan-Kosko, Sajsawaman, Sapantiana, Kollkampata, Suchuna, Incamisana, Choqueaquilla . . . all these today provide fairly complete material on the art of Peruvian gold and silver work.

The technique of the architects is even better known. A day never passes without some example of this gigantic masonry being cleared at one of the numerous excavation sites. It remained in use until the Inca period and gives their monuments the character of grandeur found nowhere else except with the Egyptians or the extremely rare European survivals of the megalithic style in the Balearics, Sardinia,

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[1] Valcarcel, *Nouvelles découvertes*, p. 11.

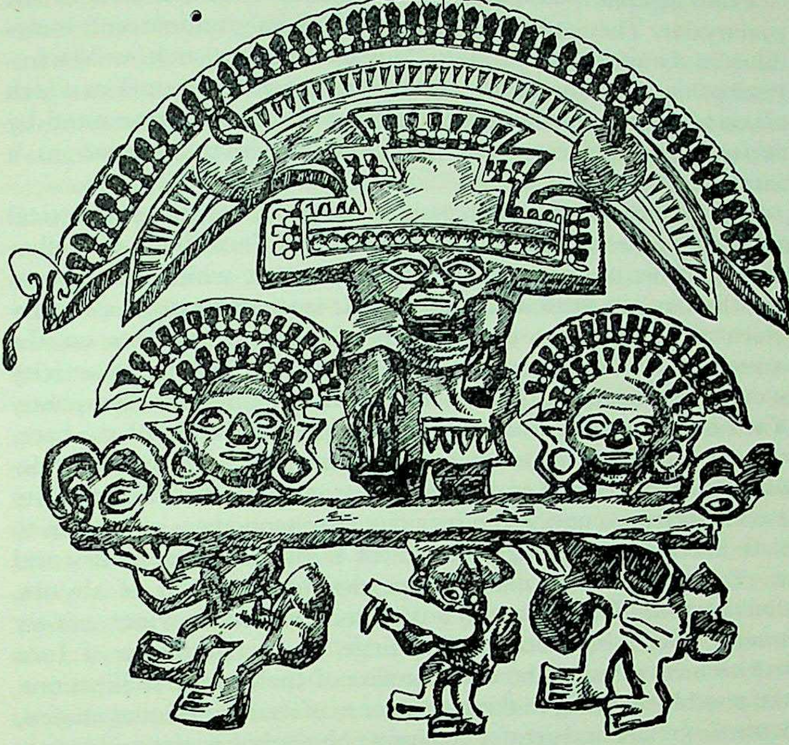

Fig. 30 Golden ornament, Lambayeque, Peru

Malta and at Stonehenge. This megalithic Peruvian style does not appear in the coastal civilizations of Chimu and Nazca, which built in adobe or employed a type of cement brick.

The technique of the architects is as precise and detailed as that of the weavers, potters, or gold and silver workers. This is evident in the way the enormous blocks are cut. Although externally the surface seems crude and barely smoothed, they are so perfectly adjusted on top of each other that it is occasionally difficult to find the joints. Elsewhere blocks are fastened together by a complicated play of tenons and mortise which ensure the indestructibility of the building. And because of this, these formidable monuments have not stirred over the centuries, despite invasions, earth tremors and the inevitable defacements of time. The ceilings have disappeared because they must have been made of adobe or wood, but the architectonic structure itself remains intact in its powerful, primitive majesty.

These gigantic buildings accord perfectly with the lines of the countryside. They are perfectly adapted to its grandeur and sometimes its savagery and sadness. The aerial towns such as Machu-Picchu show the same quality of static energy as the mountains which surround them, and the neighbourhood of Cuzco, surmounted by fortresses and palaces, joins natural and human creation in a harmonic ensemble.

The quality of the countryside, quite as much as practical necessities, governed the manner in which the Incas built, as well as their aesthetic urge and unique sense of space, which made them seek the summits nearest the sun god. It was not strategic necessity which determined the construction of immense bastions on the summits of mountains, but rather the need to reconcile the activity of man with the lines of heaven and earth, to express in a symphony of stone the metaphysical beliefs dormant in the brain of the race.

Static but dynamic, as much by the play of its terraces and stairways as by its receding and projecting profile, which military utility is not sufficient to justify, the Inca city represents the wish of man to place his eternal dwelling in the midst of all that is temporary and transitory. Above the plains, suspended on the sides of abysses, climbing towards the clouds by an interminable ascent of increasingly massive, increasingly fearless buildings, the masterpieces of Inca architecture, refusing the easy comfort of the coastal civilizations, and possibly retaining in this the memory of its mountainous origins, demands greater and greater virtuosity. Not only temples and houses hang thus between earth and sky, but even the terraces where agriculturalists brought forth their harvests. These *andenes*, equipped with scientific system of irrigation, which gives a very strange and still enigmatic appearance to some sites, is evidence of the audacity with which the Peruvians built. They were not content to suspend gardens, but even fields on the sides of the mountains.

We are far from understanding the whole significance of Peruvian architecture. We talk of temples, palaces and *andenes*, for want of better expression, and what we sometimes take to be agricultural terracing may have been buildings consecrated to some unknown rite.

We do not know what ideas, traditions or symbols were attached to certain arrangements of masses. We have seen the hill builders erecting prayers in earth to their totemic animal god. Who knows what prayers in stone the Incas could have erected before the face of the sun? Whatever they may have been, the last finds by the Shepper-Johnson aerial expeditions revealed the presence of inexplicable constructions, possibly temples in concentric circles, gigantic tombs, *andenes*, or possibly purely gratuitous monuments, fixing in stone a faith, a religious idea, a symbol giving form to some celestial truth, only intelligible to the sun.

Archaeological research may one day provide the key to all enigmas. For the moment the monuments of Cuzco reveal a greater importance, a vaster extent. A whole dead town is rising beside the living town and is also probably continued beneath post-Columbian constructions. The site of Janan-Kosko in particularly, or Old-Cuzco, is always the object of new excavations. "In November, 1933," writes Valcarcel, "I was able to realize one of the dreams of my youth: to unearth the other Cuzco, mentioned by some Spanish chroniclers and which no one had been able to see; that Janan-Kosko or Old-Cuzco, confused with what is called the 'fortress of Sajsawaman' which was only part of the great whole. The work which was undertaken achieved the most complete success. As a result, monuments of immense value, which for centuries had remained under enormous beds of earth, re-appeared. There came to light the foundations corresponding to the donjons of Muyjmarka, Paukamarka and Sallajmarka which crowned the citadel, the habitations at the south-west side which probably corresponded to offices of the cult, a multitude of canals, flights of steps, passages and a whole system of trenches parallel to the gigantic walls of the northern side, numerous terraces which covered the hill descending towards the present town of Cuzco, another collection of ten rustic style buildings, towards the east of Sajsawaman and the Suchuna sector, with a large amphitheatre. However, this has not been brought to light in its totality—in the same way as work on a series of little basins and pools which had begun to be exhumed, was interrupted because of lack of financial resources. A large esplanade stretches between this sector and that of the fortress, which has been partly explored, leading to the discovery of a group of five habitations. All the eastern side shows walls, flights of steps and the bases of buildings, which prove the existence of a vast architectural ensemble, closely linked to Sajsawaman."[1]

A full description of this prodigious collection of buildings can be found in the studies by Valcarcel on *Sajsawaman redescubierto.* Excavations are always clearing new sections here, and so it is still difficult to determine the real surface of the ruins. The other regions of Old-Cuzco have been equally methodically cleared and recent work has resulted in the emergence of the labyrinth of Kenko. This has "the shape of an amphitheatre, a surface of over 600 metres, and is decorated with 19 niches, some 1 m. 20 wide, others 80 centimetres. Beyond its wall, a door can still be seen and, on a higher level, a fountain with its spout. Straight and curved lines combine

[1] *Nouvelles découvertes*, p.3.

with great harmony in this construction, the curves unrolling in both concave and convex forms. The amphitheatre is situated to the east behind the large rock, inside which one of the Incas must have been buried, judging by the sumptuousness of the funeral chamber. Other walls and habitations abound all round, presenting a system of fortifications very similar to that at Sajsawaman. There is no doubt that this sector corresponds to the same period and was of equal importance with that of the sectors previously mentioned."[1] An extensive description of Kenko can be found with reproductions of objects discovered there and photographs of the ruins, in Valcarcel's publication: *Los Trabajos archeologicos en el Departamento del Cusco*[2] and in *Revista del Museo Nacional* at Lima, which studies recent discoveries in Peru.

Near Cuzco there was another city called Sapantiana, which means in Old Peruvian "The Unique Place". The title is justified by the fact that a rock there was surmounted by a throne where the king sat. The ruins which surround this open-air "throne-room", where the descendants of Viracocha and Manco Capac conversed with their father the Sun, show that an important town of great beauty previously existed at that place. Tampumachay also had the privilege of serving as summer residence to the Inca, because it was rich in springs, some of them possessing famous therapeutic qualities. A whole city was erected around the water-town, honoured by the monarch's favour, and the installations of what once served as a thermal establishment have been determined. Finally, Kollkampata holds the ever-living memory of Manco Capac, the first king of Cuzco, who established his capital there. This developed prodigiously throughout the Inca dynasty until the arrival of the Spaniards, who put an end to its prosperity. The temples, palaces and the houses of the Virgins of the Sun, who lived cloistered like vestals, and celebrated the cult of the Sun-King, are beginning to shake off the débris and tell not only of their ancient splendour—which has, alas, disappeared—but also of a chapter of history thought to be forgotten.

It was not only the neighbourhood of Cuzco which was prodigiously rich in ruins of the Inca Period. The town of Ollantaitambo, in particular, shows by its extent, its beauty and the gigantic majesty of its buildings, the importance of the cultural centre which previously animated it. Plans, photographs and descriptions of this town, which Peruvian archaeologists have recently excavated, can be found in the reports of Luis A. Llanos, published in Lima in 1936. It is unfortunately impossible to enlarge on these ruins here, despite the considerable interest they present. A résumé is given in another quotation from Valcarcel: "At the summit of the fortress of Ollantai-

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[1] *Op. cit.*, p. 12.

[2] Lima, 1935.

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tambo, a whole series of totally unknown buildings was brought to light: habitations, passages, terraces, fountains, canals, tombs, flights of steps which form an entity of obvious unity, as much from the point of view of period as of style. A great deal of construction materials, still unused, was found there: finely worked red and green freestones, red and black squared stones of elegant dimensions, nails, slates. All this leads one to suppose that the Spanish invasions interrupted the work of the native architects in full spate. Very interesting gems were discovered in the Incamisana region. These are very delicately polished and seem to be dice, made of crystal. Others were placed near sacred rocks, veritable chapels which show how great a religious centre this area was. The solar observatory situated on the summit of the hill, and the terraces which surround the various sectors were cleared and exposed in their majestic aspect. Ollantaitambo, like Sajsawaman, has increased half as much again in size through the extension of the cleared zone of these imposing ruins. The archaeological harvest was important because some intact tombs were found and it has been possible to clear these in a methodical manner."[1]

Paramonga, which was an enormous fortified town, probably built by the Chimu, then taken and utilized by the Incas, displays a formidable perspective of bastions, donjons and citadels. Tarawasi, cleared since 1934, shows the plan of a town surrounded by all its agricultural regions, established on *andenes*. The Wanka citadels of the valley of Jauja, which sometimes offer such a curious resemblance to the *nuraghi* of Sardinia, have been the object of interesting work, which has separated the constructions of Schujoss, Kancha-Marka, Chajas-Marka, Tragadero, Ascha-Kuto, etc. . . . Pikillajta has come back to life, an important town concealed under stretches of vegetation, bringing to light, apart from extensive ruins, treasures which can be mentioned in the same breath as those of Walla Walla. Mention must finally be made of Pisac, where a magnificent collection of religious and military monuments emerged from the earth, surrounded by urban and agricultural works of public utility. This is evidence that an intense and active life was carried on within that gracious and majestic décor of which nothing remains today but the stone skeleton. "The explored zone at Pisac", says Valcarcel, "has increased enormously as a result of work carried out there. From the solar chapel where the sun clock or Intiwatana is situated, an important perimeter of several miles has been excavated, where numerous constructions hitherto unknown have emerged, paths on the edges of sharp tunnels cut in the live rock, observation towers, defensive parapets, walls, terraces, fountains, aqueducts, bastions, tombs, prisons. No monument offers a more admirable play of agricultural terraces, gigantic gardens suspended over the abyss."[1]

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[1] *Nouvelles découvertes*, p. 7.

We might mention many other dead cities where vast architectural ensembles have been cleared. Choqueaquilla and its sculptured black rocks; the fortress of Muyukawa, of which the five concentric ramparts are as strangely undulating as the façades of Baroque churches; the mausoleums and Intiwatana of Ollantaitambo; the fortresses of Manyaraqui, its profile jagged like an Assyrian fortress; the sanctuaries of Incamisana; the ruins of Chocana, which slept for centuries in a swarm of cactus until the axe and pick of archaeologists extracted them; those of Pinculluna which are beginning to be freed from the vegetation which disguised them; the monoliths of Salapuncu, still occupied by the huts of the Indians who live in these ruined buildings, which their ancestors built in former times . . . but what is the use of prolonging the enumeration? Already enough has been said to demonstrate the zeal of the Peruvian archaeologists in discovering the remains of their ancestors' civilizations.

As the ruins rise from the earth and throw off the parasitic vegetation, disentangle themselves from their crust of débris, and present once more to the face of the sun the towns which were previously consecrated to it, we can better measure both the complexity and continuity of a culture buried in the obscurity of prehistory. On its threshold, the monstrous idols of Tiahuanaco watch, as it gradually develops, ever faithful to its urge for grandeur and majesty, even to those last construction yards which Atahualpa may have visited a few days before his torture, encouraging the zeal of the architects and the assiduousness of the priests and where the tools thrown in disorder near the scattered material are evidence that the tempest cut down this civilization in its full flower and fertility, like that last Inca who died garrotted, his eyes lifted for the last time to his father and god, the sun—the sun which could not save him.

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[1] *Op. cit.*, p. 12.

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Lin Yutang's text is supplemented by an essay on Chinese art, with particular reference to Peking, and a discussion of the reproductions included in the book, by Peter C. Swann, Keeper of the Department of Eastern Art in the Ashmolean Museum, Oxford.

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